XPS-100

System Operations
Guide

XPS-100

System Operations Guide

SUBJECT

Operating Instructions for the XPS-100 System

The following notice is provided in accordance with the United States Federal Communications Commission's (FCC) regulations.

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Section I

DESCRIPTION OF THE SYSTEM

INTRODUCTION

The system is a small but powerful computer designed to make your daily work easier and faster.

It consists of:

- A main unit
- A variable number of peripherals.

The main unit consists of:

- A central unit
- An optional expansion unit

Two external units may be connected to the two units: a tape unit and up to two removable disk units.

The central unit contains:

- An electronic cage containing a maximum of 13 boards and the termination board

- A main disk unit

- Two additional disk units

- A diskette unit

- A streamer unit
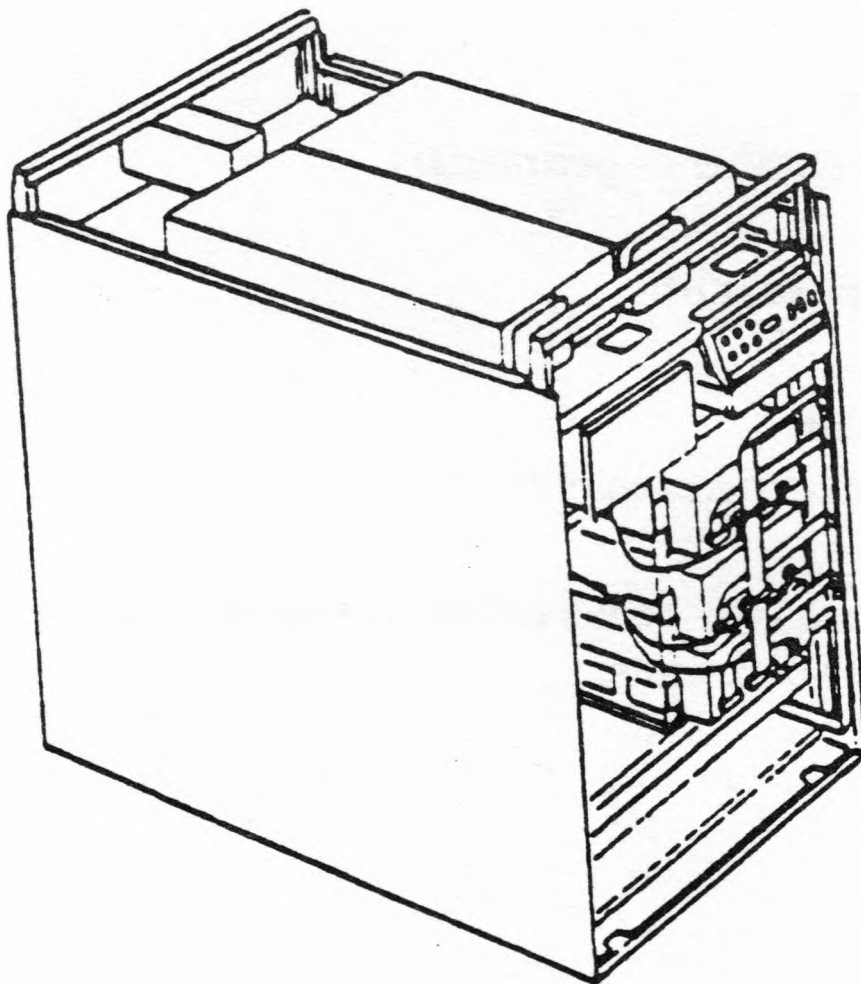
The expansion unit contains:

- An electronic cage containing a maximum of 13 boards

- Additional disk units.
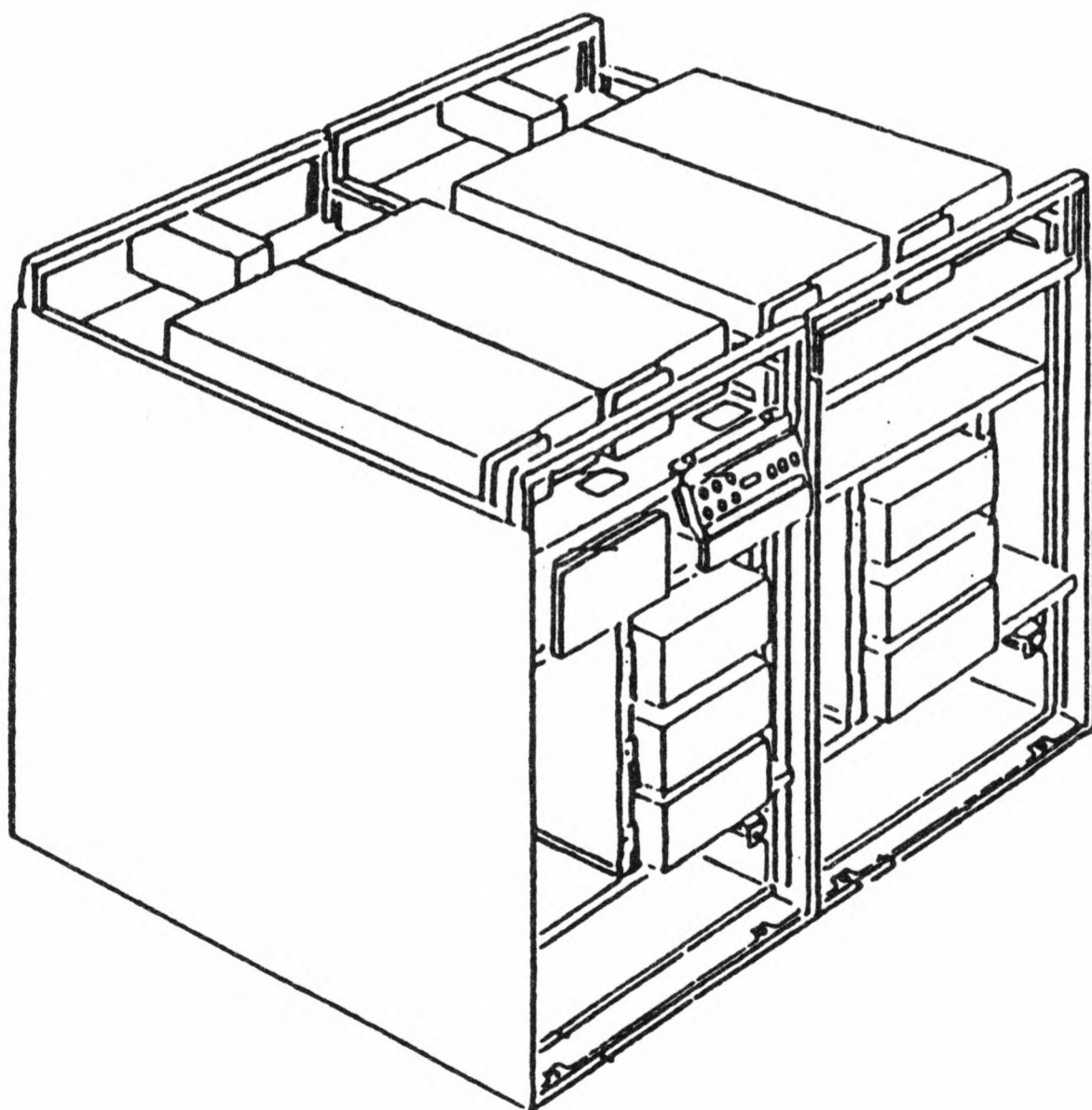
CONTROL PANEL

The control panel is located in the upper part of the central unit.

The panel allows the user to perform certain operations and check that they have been executed correctly. The table on the following page shows the components of the panel and their functions.
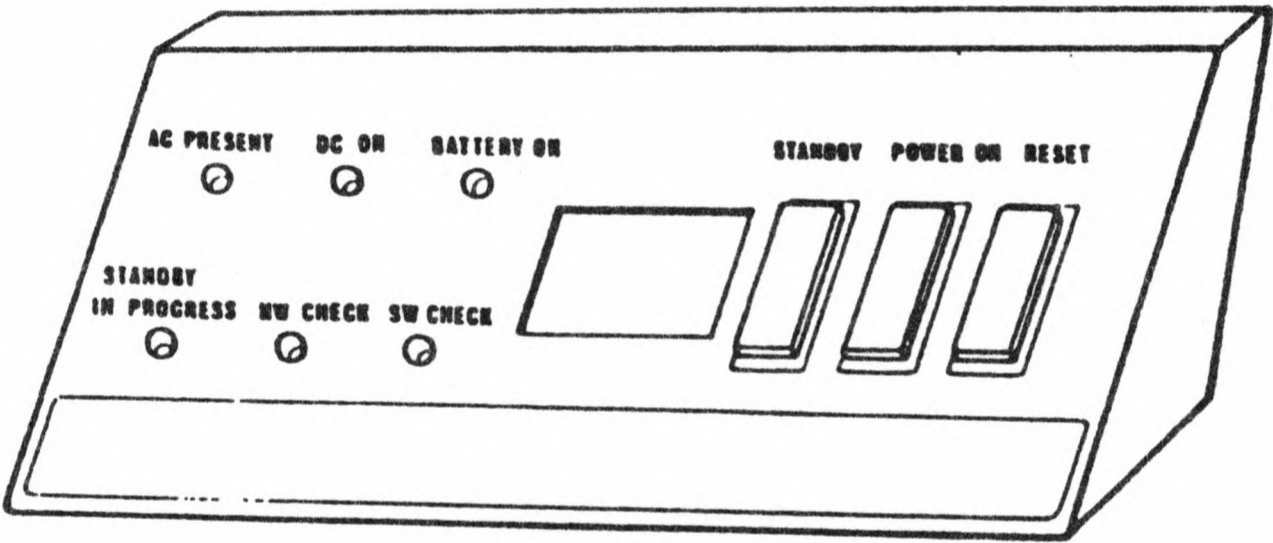
PANEL COMPONENT	FUNCTION
POWER ON	Starts the system's power-on phase
RESET (button)	Resets the system
STAND BY (button)	Starts the process of closing down the system
(digital display unit)	Indicates the system status
HW CHECK (red indicator light)	Indicates the need for a hardware check
SW CHECK (red indicator light)	Indicates the need for a software check
STANDBY (red indicator light)	Indicates the powering-off of the system with the STANDBY button
AC PRESENT (green indicator light)	Indicates that the system has been connected to the mains AC
DC ON (green indicator light)	Indicates that the power supply to the system is functioning correctly
BATTERY ON (green indicator light)	Indicates that the emergency battery is in use

DISK UNIT

The system can accommodate up to six disk units, according to the hardware configuration. The following disk types can be used:

```
WREN2   with   ST506  interface
MAXTOR  with   ESDI   interface
WREN3   with   ESDI   interface
```

The system disk, containing the operating system, is located in the central unit and is active as soon as the POWER ON button is pressed subsequent to turning on the system.

The additional disks may be installed at a later date.
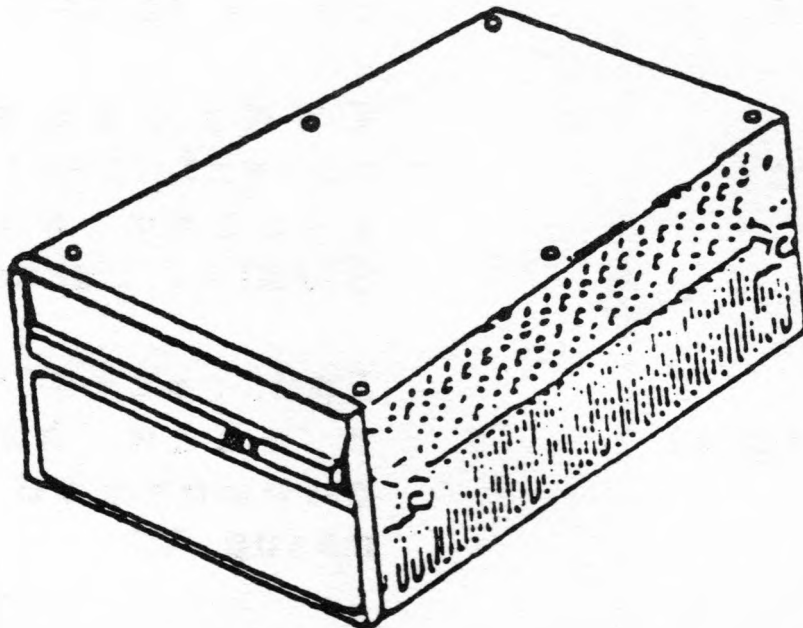
REMOVABLE DISK UNIT

Removable 9710-80 MPI type disk with an SMD-O/E interface, residing in a special external container, may be connected to the system. These disks are handled by a VME/RCD type board (one board support up to two external disks).
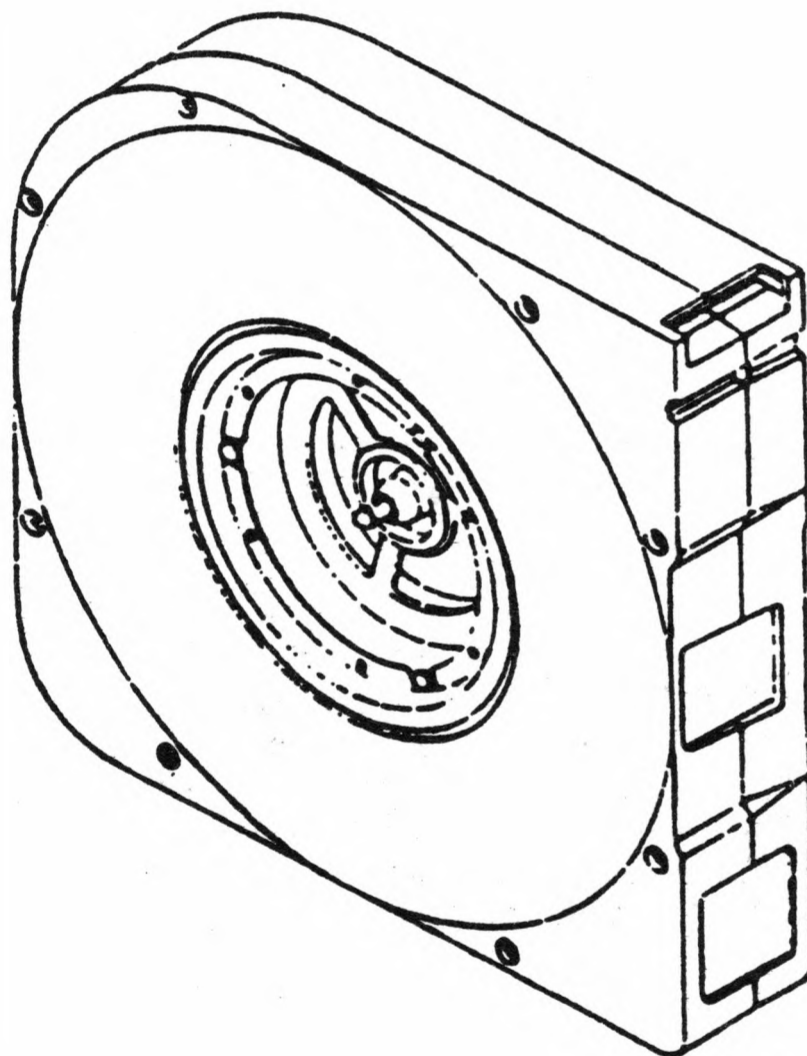
DISKETTE UNIT

The diskette unit is installed in the upper part of the central unit underneath the control panel. The diskettes are 5 1/4 inch, double-side/double-density.

The unit has a horizontal opening for the insertion of the diskettes and is protected by a small shutter.

Below and to the left of this opening, there is an indicator, and above it to the right, there is a small lever. The indicator lights up when a read or write operation is performed on the diskette. The lever locks the insert/extract mechanism of the diskette unit, controlling insertion/removal of the diskette.
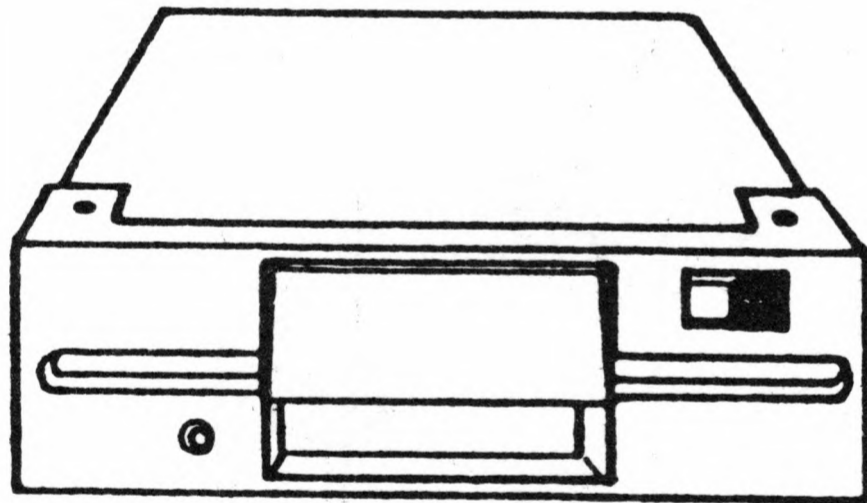
STREAMER UNIT

The streamer unit used on the system is designed for cartridges.

It is located in the upper part of the unit and has an opening for the insertion of the cartridge, protected by a security lever. Above on the left, there is an indicator that lights up when an operation is executed on the cartridge.
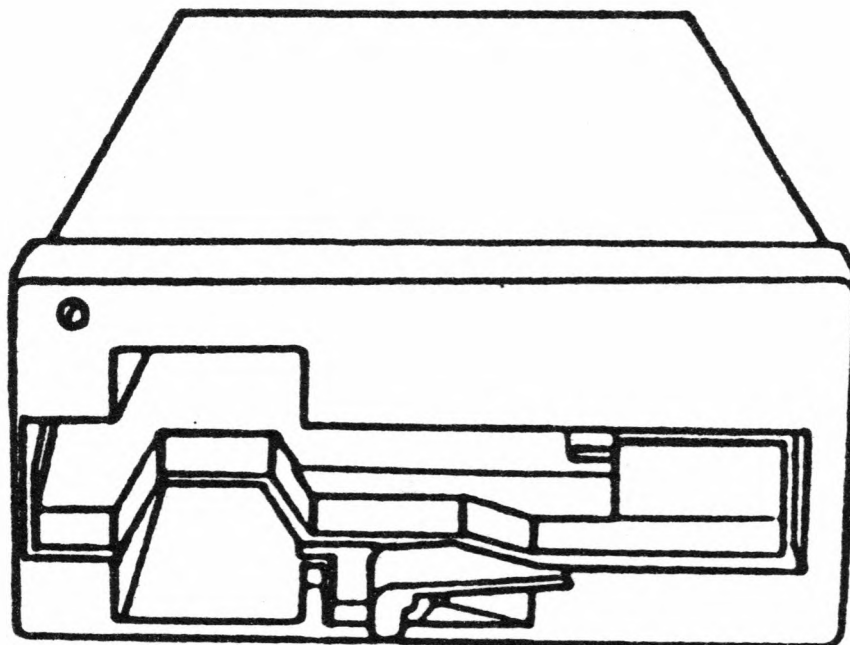
TAPE UNIT

Removable tapes, residing in a special external container, may be connected to the system. These tapes are handled by a WME/TAC type board (one board supports up to three external tapes).

WORKSTATIONS

Each workstation consists of a screen and a keyboard.

The system uses the screen to supply information and to request the entering of data.

The keyboard is used by the operator to enter data and commands.

Most characters are the same as those on a normal typewriter. In addition, there are special keys called "function keys", which are used to perform predefined system commands.

For a list of the keyboards available and a description of their functions, consult the corresponding operations guide.

The workstations which can be connected to the system are listed below, together with a brief description of their main characteristics.

VIP72XX
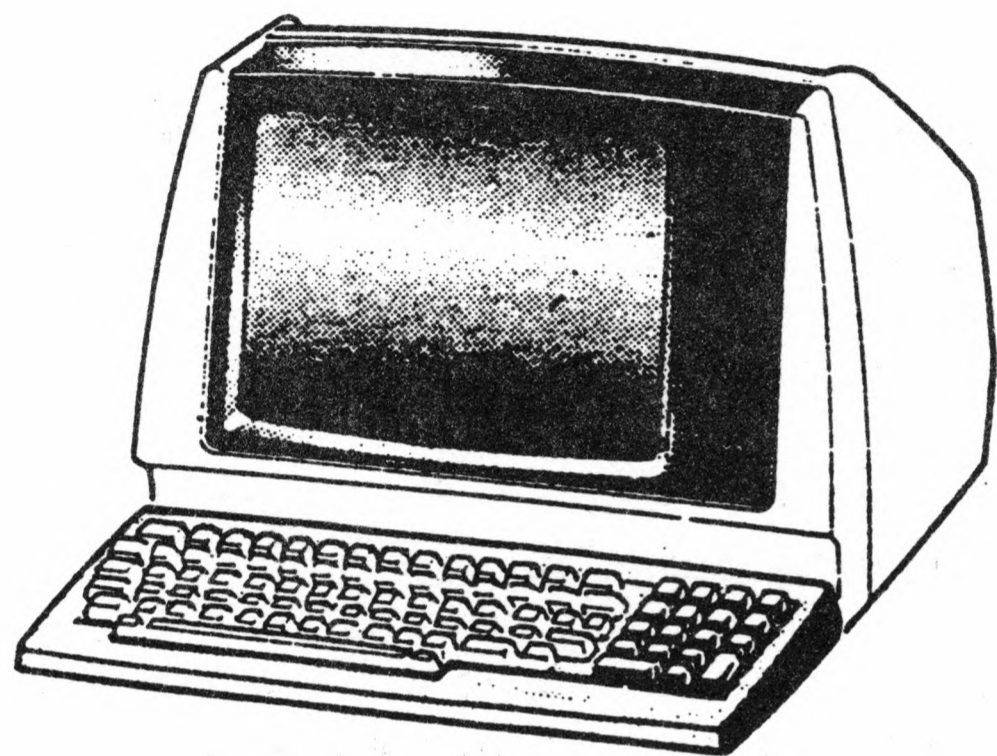
Transmission:	*Asynchronus*
Screen Format:	*12"*
Operating Mode:	*Character Mode*
Screen:	*Phosphorous green*
Line/Characters:	*24/80*
Keyboard:	*General Purpose*
Interface:	*RS232/RS422*

TEKTRONIX 4107

Transmission	*Asynchronous*
Screen Format	*13"*
Operating Mode	*Form Mode*
Screen	*16 Colors Phosphorous*
Lines/Characters	*30/80*
Keyboard	*Standard*
Graphic cursor control	*Joystik*
Interface	*RS232*
Prerequisite	*VCW 065 cable and LP0 Board*
Requires	*Specific Software*

VTU001X
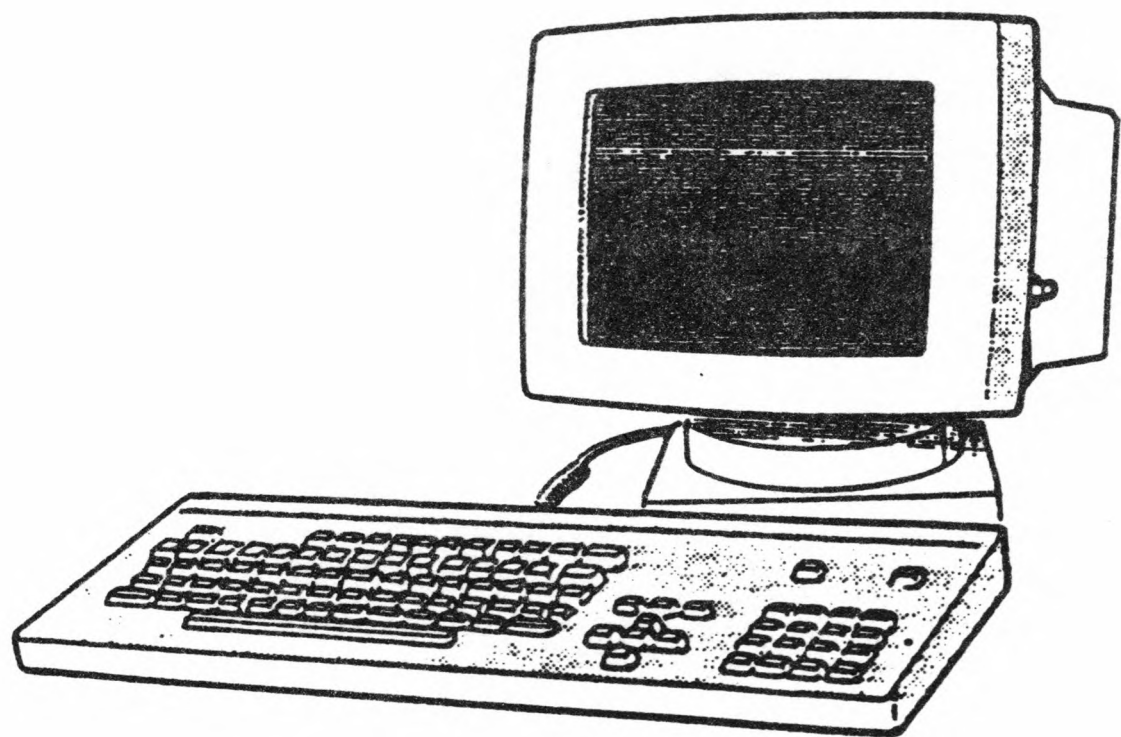
Transmission	*Asynchronous*
Screen Format	*12"*
Operating Mode	*Character Mode*
Screen	*Phosphorous green*
Lines/Characters	*25/80*
Keyboard	*General Purpose*
Interface	*RS232C/RS422A*

VTU004X
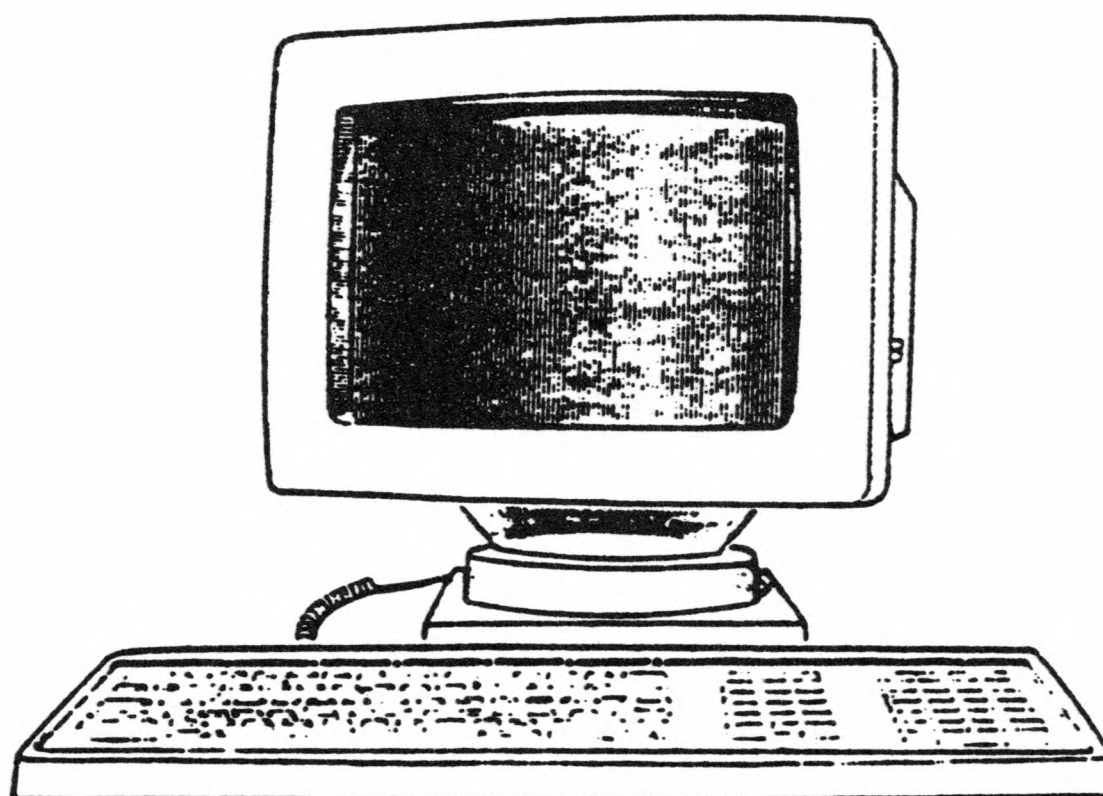
Transmission	*Asynchronous*
Screen Format	*15"*
Operating Mode	*Character Mode, Text Mode;Form Mode*
Screen	*Phosphorous green*
Lines/Characters	*25/80*
Keyboard	*Keys keyboard with Italian character set for WP* *Keys keyboard with International character set for DP/DE*
Interface	*RS232C/RS422A*

VTU005X

Transmission	*Asynchronous*
Screen Format	*14"*
Operating Mode	*Character Mode, Text Mode, Form Mode*
Screen	*14 colours*
Lines/Characters	*25/80*
Keyboard	*Keys Keyboard with Italian character set for WP Keys keyboard with International character set for DP/DE*
Interface	*RS232C/RS422A*

HDS71XX
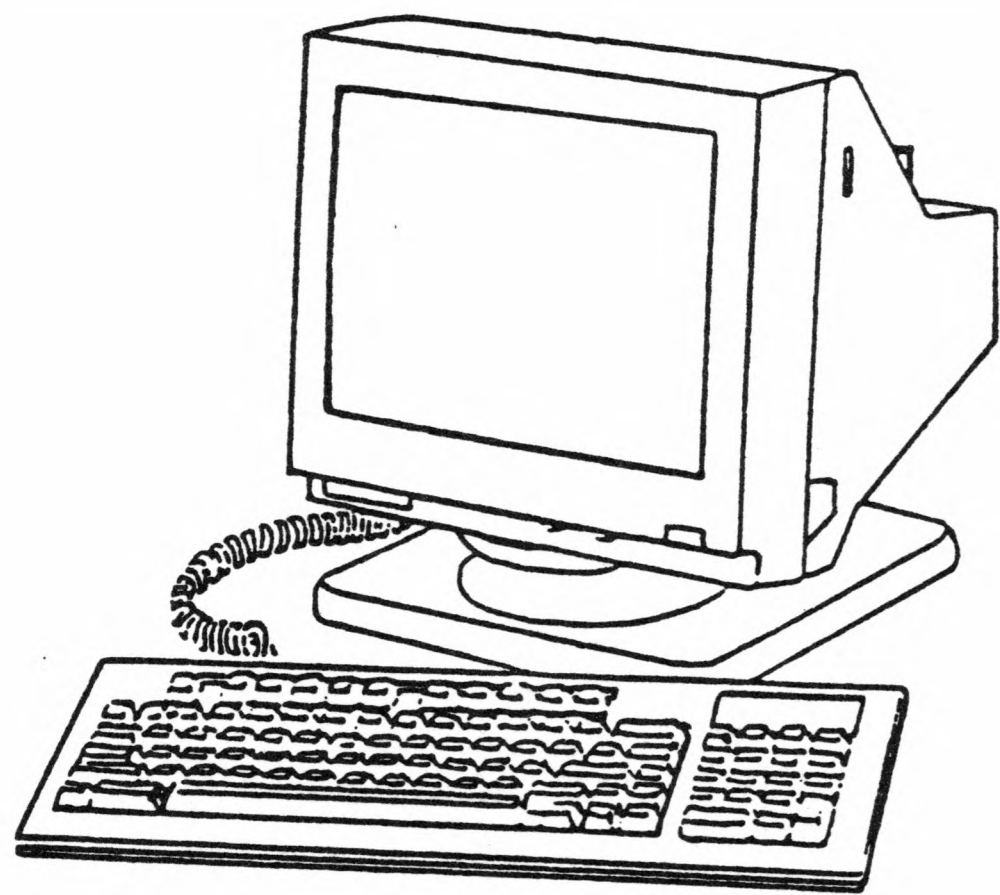
Transmission	*Asynchronous*
Screen Format	*14"*
Operating Mode	*Character Mode*
Screen	*Phosphorous green/amber*
Lines/Characters	*25/80*
Keyboard	*Multifunction*
Interface	*RS232C/RS422A*

HDS74XX
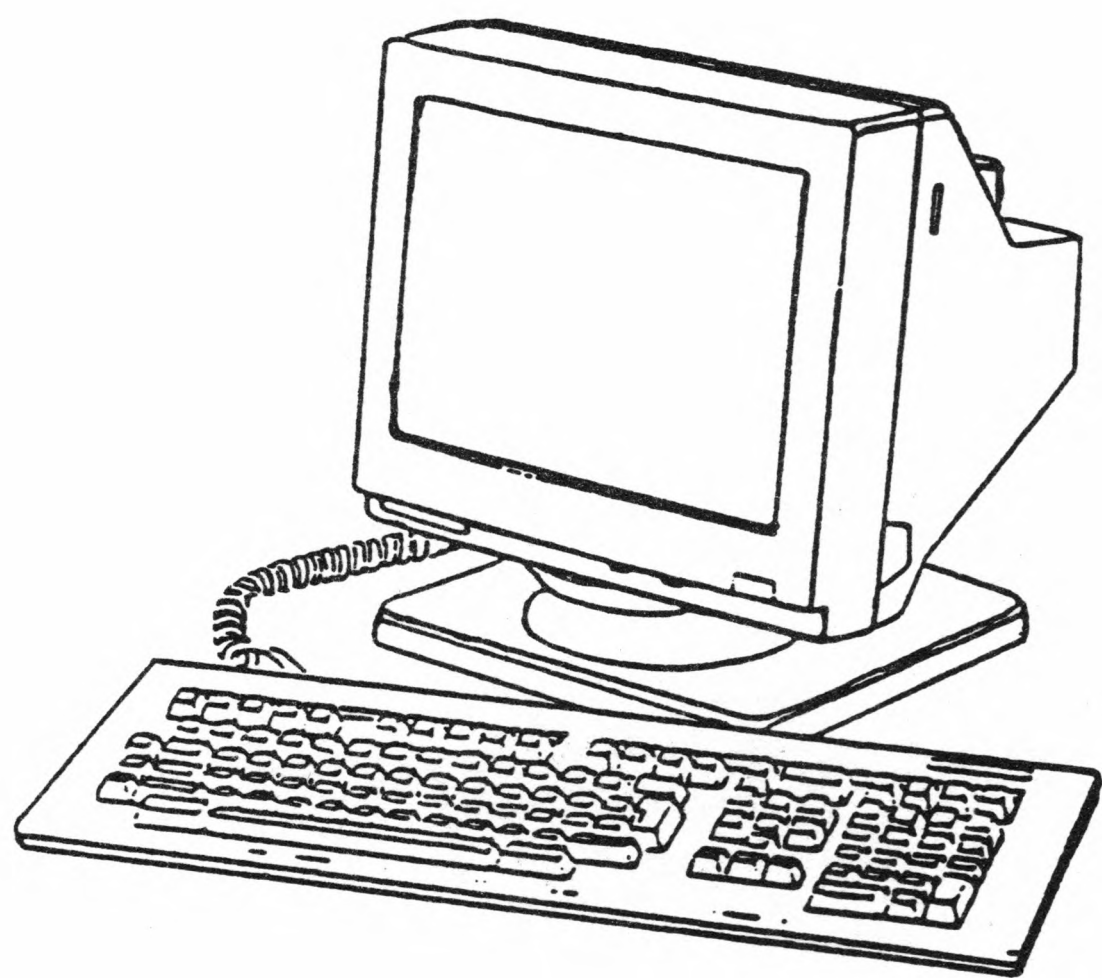
Transmission	*Asynchronous*
Screen Format	*14"*
Operating Mode	*Block Mode*
Screen	*Phosphorous green/amber*
Lines/Characters	*25/80. 25/132*
Keyboard	*Multifunction*
Interface	*RS232C/RS422A*

PRINTERS

Printers are the machines used to produce the computed results on paper.

The specifications and functions of the printers that can be used with the system are supplied in the corresponding operation guides.

The printers which can be connected to the system are: L 12/32 CQ I, 34 CQ, 36 CQ, L38, 4/20, 4/21, 4/66, 4/66 P, 4/62, 4/40, 4/41, LASERPAGE 801 and LASERPAGE 601. The main specifications of each printer are listed in the following pages.

L 12/32 CQ I
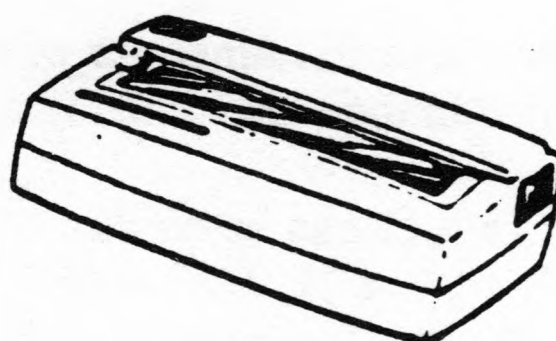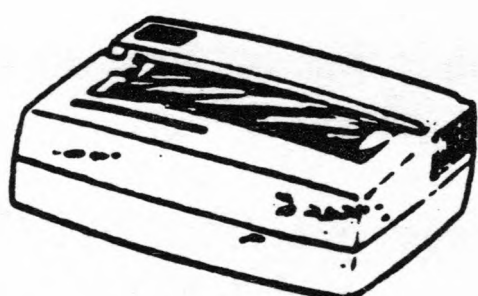
Interface	*Centronics 8 bit parallel. Serial RS232/C for local and remote connection.*
Printing method	*Bidirectional with logic seeking for single sheet and fanfold paper.*
Printing type	*Serial dot matrix.*
Printing speed	*150 characters per second for non-quality printing. 42.5 characters per second for quality printing.*
Number of columns	*10 characters per inch:*
L 12 CQ I	*80*
L 32 CQ I	*132*
Character sets	*IBM1, IBM2 and 10 character sets are available.*

34 CQ
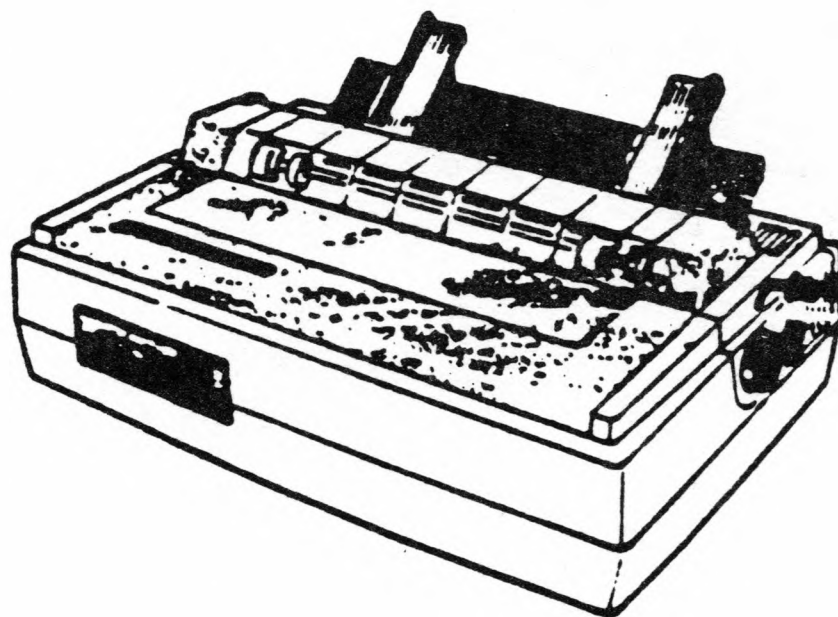
Interface	*Centronics 8 bit parallel. Serial RS232/C for local and remote connection. Serial RS422/A for local connection only.*
Printing method	*Bidirectional with logic seeking for single sheet and fanfold paper.*
Printing type	*Serial dot matrix.*
Printing speed	*220/240 characters per second for non-quality printing. 120 characters per second for quality printing.*
Number of columns	*132 at 10 characters per inch. 158 at 12 characters per inch. 175 at 13.3 characters per inch. 198 at 15 characters per inch. 220 at 16.7 characters per inch. 226 at 17.1 characters per inch.*
Character sets	*IBM1, IBM2 and 11 character sets are available.*

36 CQ
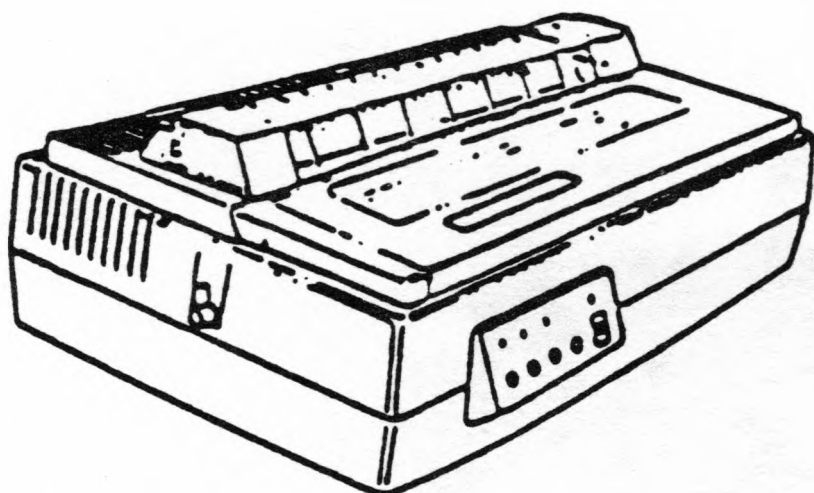
Interface

Centronics 8 bit parallel. Serial
RS232/C for local and remote
connection. Serial RS422/A for local
connection only.

Printing method

Bidirectional with logic seeking for
single sheet and fanfold paper.

Printing type

Serial dot matrix.

Printing speed

200/300 characters per second for
non-quality printing. 120 characters
per second for quality printing.

Number of columns

132 at 10 characters per inch.
158 at 12 characters per inch.
176 at 13.3 characters per inch.
198 at 15 characters per inch.
220 at 16.7 characters per inch
226 at 17.1 characters per inch.

Character sets

IBM1, IBM2 and 9 character sets are
available.
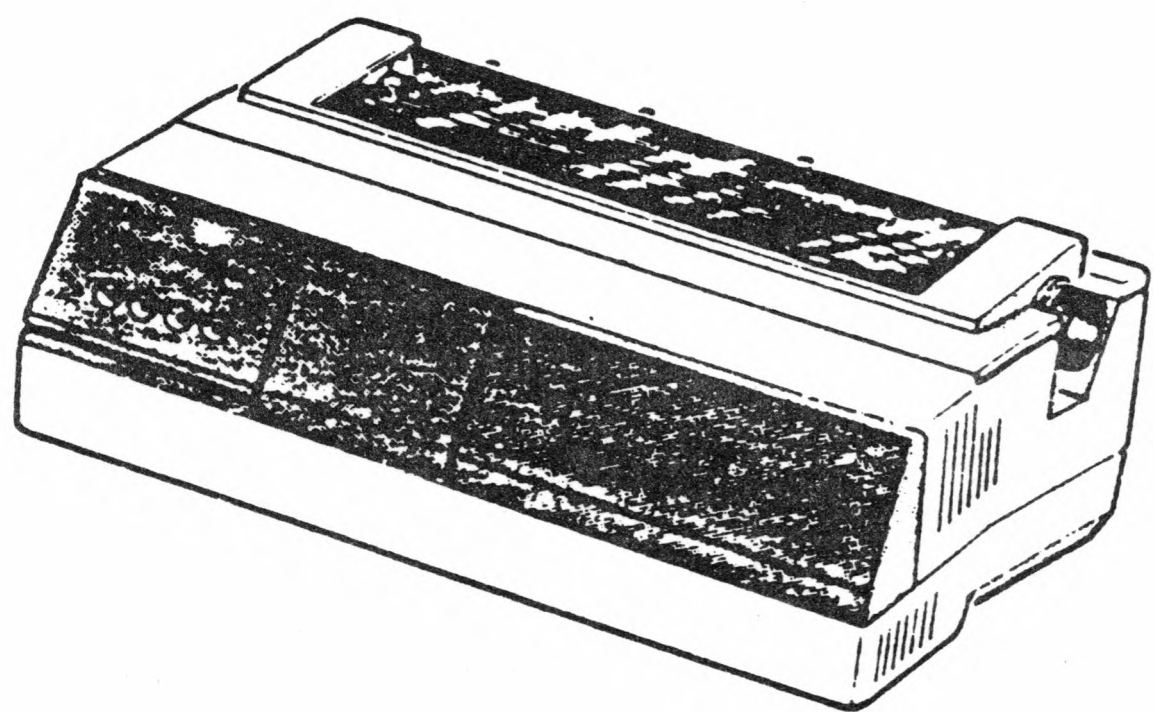
Interface	*Centronics 8 bit parallel.*
Printing method	*Bidirectional with logic seeking for single sheet and fanfold paper.*
Printing type	*Serial dot matrix.*
Printing speed	*400 characters per second.*
Number of columns	*132 at 10 characters per inch.* *220 at 16.7 characters per inch*
Character sets	*IBM1. IBM2 and 8 character sets are available.*
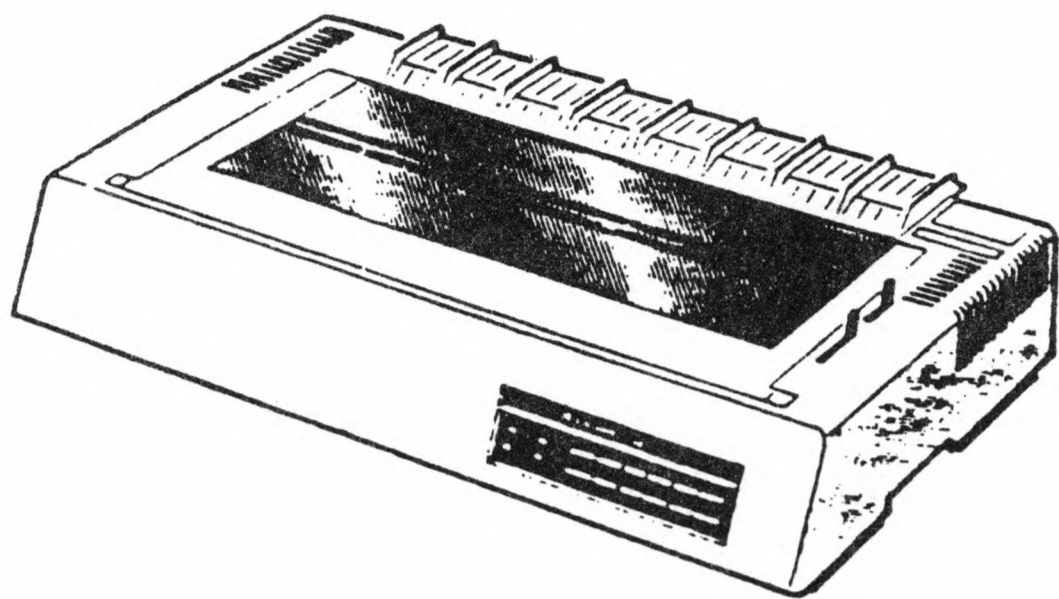
Interface	*Centronics 8 bit parallel. Serial RS232/C for local and remote connection (optional). Serial RS422/A for local connection only (optional).*
Printing method	*Bidirectional with logic seeking for single sheet and fanfold paper.*
Printing type	*Serial dot matrix.*
Printing speed	*200 characters per second for non-quality printing. 40 characters per second for quality printing.*

Number of columns

| 4/20 | 4/21 | 10 characters per inch: |
| | | *80 col.   136 col.* |

| | | 12 characters per inch: |
| 4/20 | 4/21 | *96 col.   162 col.* |

| | | 17.1 characters per inch: |
| 4/20 | 4/21 | *136 col.   232 col.* |
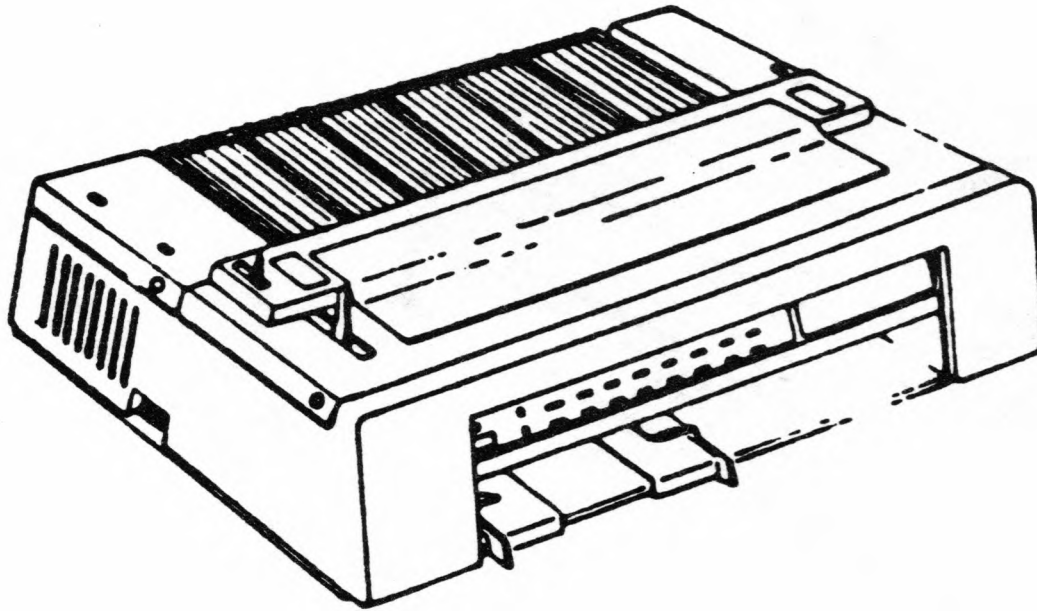
Interface	*Centronics 8 bit parallel. Serial RS232 for local and remote connection. Serial RS422 for local connection only.*
Printing method	*Bidirectional with logic seeking for single sheet and fanfold paper.*
Printing type	*Serial dot matrix. Dot graphics in 7 possible colours.*
Printing speed	*360/480 characters per second for non-quality printing. 180 characters per second for quality printing.*
Number of columns	*136 at 10 characters per inch. 163 at 12 characters per inch. 240 at 15 characters per inch. 227 at 16.7 characters per inch. 233 at 17.1 characters per inch.*
Character sets	*IBM1, IBM2 and 8 character sets are available.*
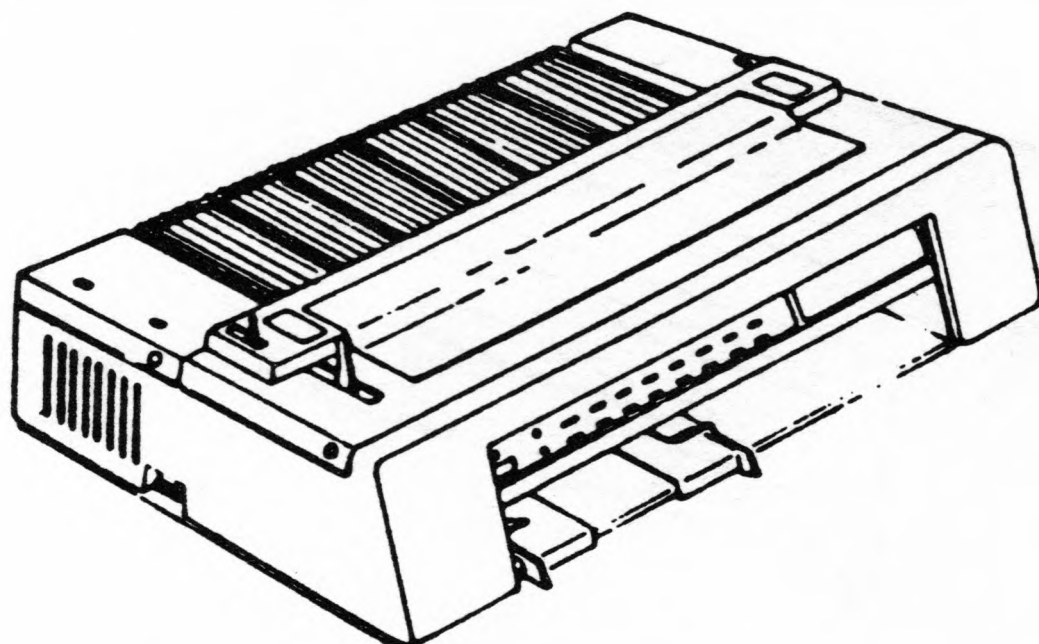
Interface	*Centronics 8 bit parallel. Serial RS232 for local and remote connection. Serial RS422 for local connection only.*
Printing method	*Bidirectional with logic seeking for single sheet and fanfold paper.*
Printing type	*Serial dot matrix. Dot graphics in 7 possible colours.* *Plotter emulation.* *Emulation of eight pens of 8 colours each.*
Printing speed	*360/480 characters per second for draft printing. 180 characters per second for quality printing.*
Number of columns	*136 at 10 characters per inch.* *163 at 12 characters per inch.* *204 at 15 characters per inch.*

233 at 17.1 characters per inch.
272 at 20 characters per inch..

Character sets   :   IBM1, IBM2 and several national
                                     character sets are available.
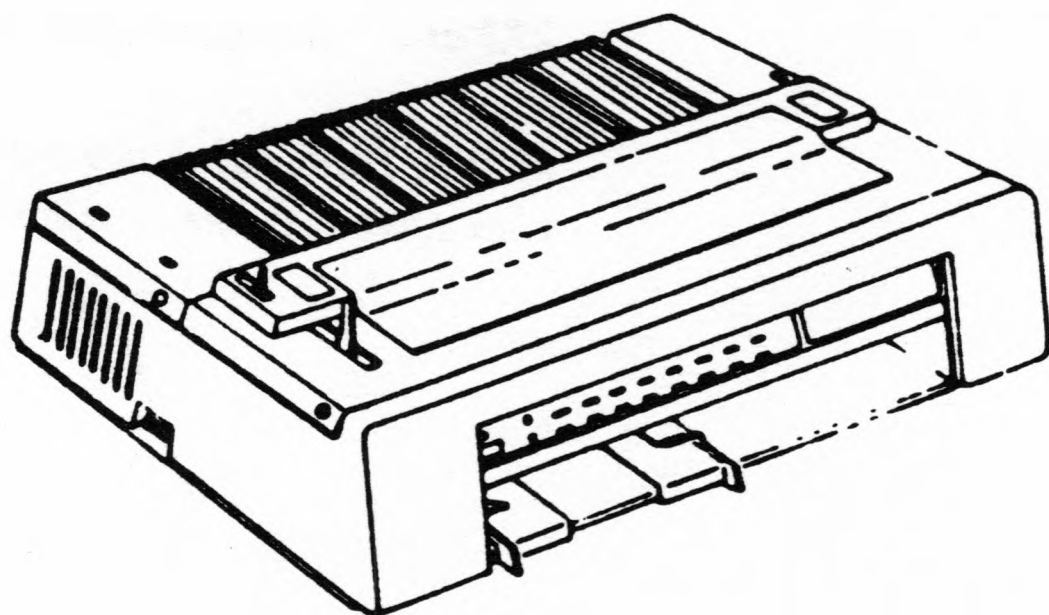
Interface	*Centronics 8 bit parallel. Serial RS232 for local and remote connection. Serial RS422A for local connection only.*
Printing method	*Bidirectional with logic seeking for single sheet and fanfold paper.*
Printing type	*Serial dot matrix. Dot graphics in 7 possible colours.*
Printing speed	*240/250 characters per second for draft printing. 115/122 characters per second for quality printing.*
Number of columns	*154 columns at 10 characters per inch.* *184 columns at 12 characters per inch.* *231 columns at 15 characters per inch.*

264 columns at 17.1 characters per inch.
308 columns at 20 characters per inch.

Character sets

IBM1, IBM2 and 8 character sets are available.

4/40 and 4/41
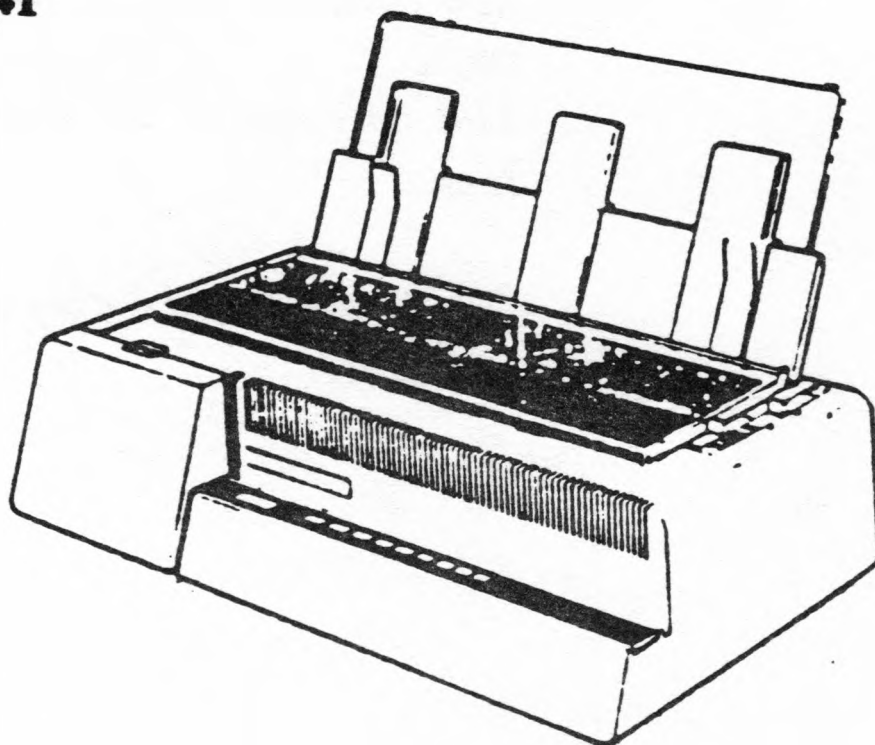
Interface	*Centronics 8 bit parallel. Serial RS232 for local and remote connection. Serial RS422/A for local connection only.*
Printing method	*Bidirectional with logic seeking for single sheet and fanfold paper.*
Printing type	*Serial dot matrix. Dot graphics in 7 possible colours.*
Printing speed	*250/300 characters per second for draft printing. 66/90 characters per second for quality printing.*
Number of columns	*4/40:100 columns, 4/41:136 columns at 10 characters per inch. 4/40: 120 columns, 4/41: 163 columns at 12 characters per inch.*

4/40: 150 columns. 4/41: 204 columns at 15 characters per inch.

4/40: 171 columns. 4/41: 233 columns at 17.1 characters per inch.

4/40: 200 columns. 4/41: 272 columns at 20 characters per inch.

IBM1. IBM2 e 8 character sets are available.

Character sets

LASERPAGE 601

Interface	*Centronics 8 bit parallel. Serial RS232/C for local and remote connection.*
Printing method	*Dry-type electrophotography.*
Printing type	*Laser. High resolution dot matrix pattern (300 x 300 dots per inch).*
Printing speed	*Six pages per minute.*
Character sets	*IBM1, IBM2 and 8 character sets are available*
Resident fonts	*Courier (10 cpi).* *Prestige Elite (12 cpi).* *Letter Gothic (15 cpi).* *Century Ps.* *Optional font cartridges.*

LASERPAGE 801
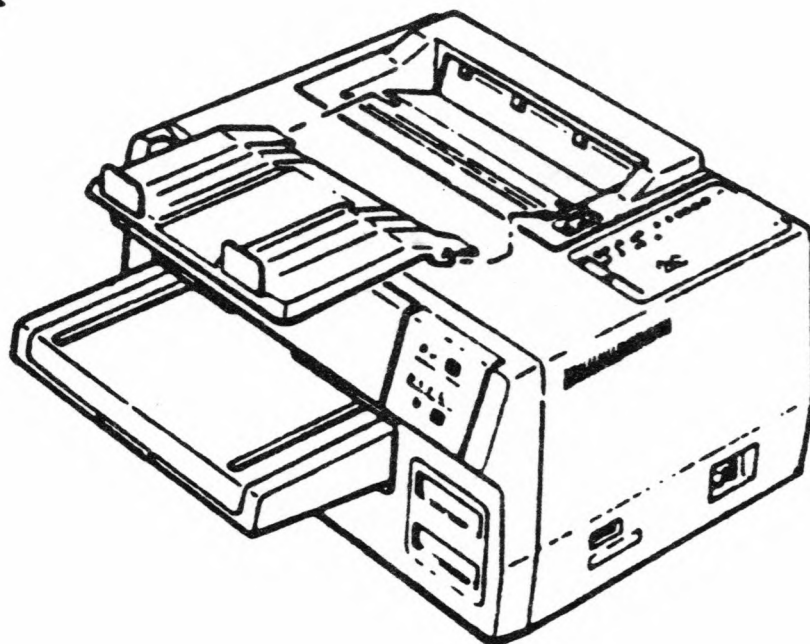
Interface	*Centronics 8 bit parallel. Serial RS232/C for local and remote connection.*
Printing method	*Dry-type electrophotography.*
Printing type	*Laser. High resolution dot matrix pattern. (300 x 300 dots per inch)*
Printing speed	*Eight pages per minute.*
Character sets	*IBM1, IBM2 and 8 character sets are available.*
Resident fonts	*Courier (10 cpi) Standard and Italic Prestige Elite (12 cpi) Standard and Italic, times roman PS (Proportional) and Compressed (16.7 cpi) Two font cartridge slots for optional font cartridges.*

Section II

PRINCIPAL DAILY OPERATIONS

POWERING THE SYSTEM ON AND OFF

Follow the instructions below to turn on the system:

- set the main switch at the back of the central and expansion unit (if present) to "I";

- press the POWER ON button on the control panel. This starts the power-on phase.

Follow the instructions below to turn off the system:

- press the STANDBY button on the control panel and wait until the DC ON indicator unlits;

- set the main switch at the back of the central and expansion unit (if present) to "O".

For the instructions on powering the peripherals on and off, refer to the appropriate supplier manuals.

INSERTING AND REMOVING DISKETTES

To insert the diskette:

1. Make sure the safety lever is positioned to the right.

2. Open the shutter door by pushing it upwards.

3. Take the diskette out of its envelope and hold it by the label.

4. Make sure the write protection slot is covered, if the diskette is only to be used for reading, and uncovered if it is to be used for writing.

5. Insert the diskette in the horizontal opening of the unit with the write protection slot facing left. Push it in as far as possible.

6. Close the shutter door and push the safety lever to the left to lock the door.

To remove the diskette:

1. Push the lever to the right to unlock the door.

2. Open the shutter door and extract the diskette.

3. Place the diskette in its envelope and put it in its box.

INSERTING AND REMOVING STREAMER CARTRIDGES

To insert the cartridge:

1. Make sure the safety lever of the tape unit is in the lower position.

2. Pull the loading guide out of the unit until it locks.

3. Take the cartridge out of its box.

4. Make sure the write protection arrow is pointing towards SAFE if you need only to read the cartridge, or in the opposite direction if you want to write on the cartridge.

5. Put the cartridge in the loading guide so that the metal side is facing downwords.

6. Push the cartridge and the guide into the unit and turn the locking lever upwards.

To remove the cartridge:

1. Turn the locking lever downwards.

2. Hold the right corner of the cartridge and pull it out of the unit.

3. Place the cartridge in its box.

4. Push the loading guide back into the unit.
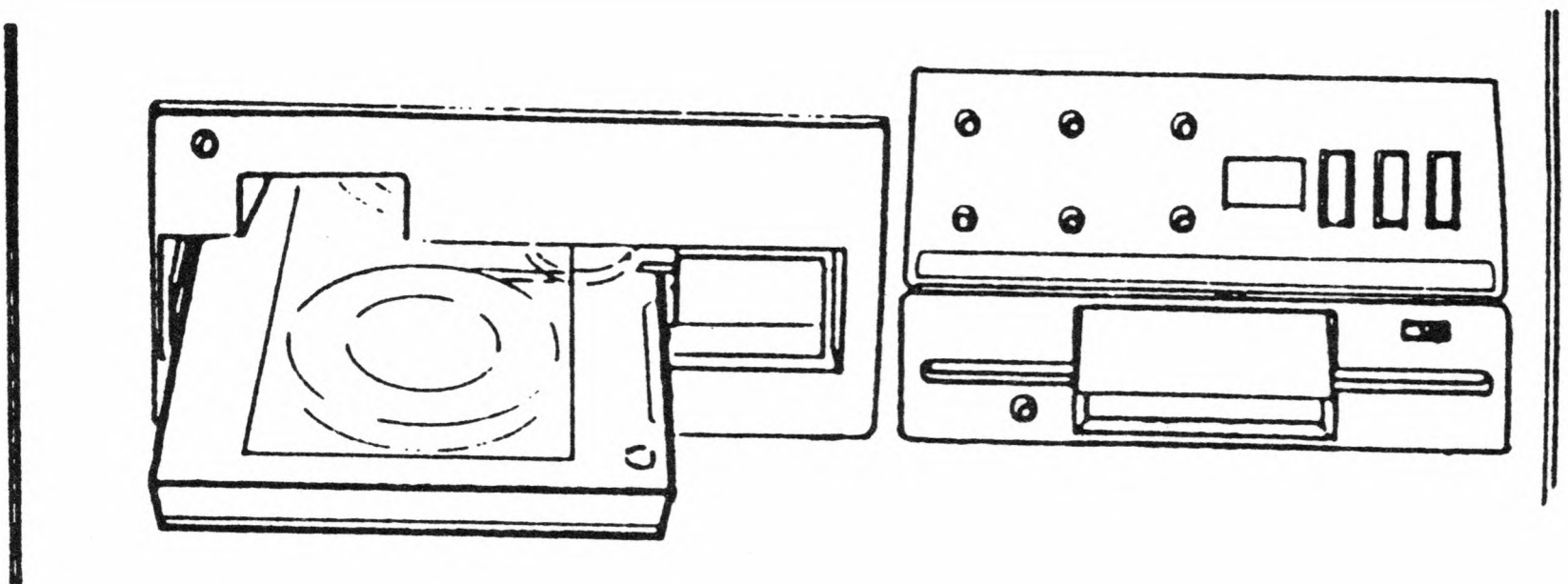
PROTECTION OF THE STORED DATA

All data stored on diskettes and streamer cartridges can be protected by using the appropriate device on each of them to prevent accidental writing.

Protection of Data on Diskettes

To avoid accidentally writing to a diskette, cover the write protection slot, located on one edge of the diskette, with a sticky label. Removing this label will make it possible to write to the diskette once more.
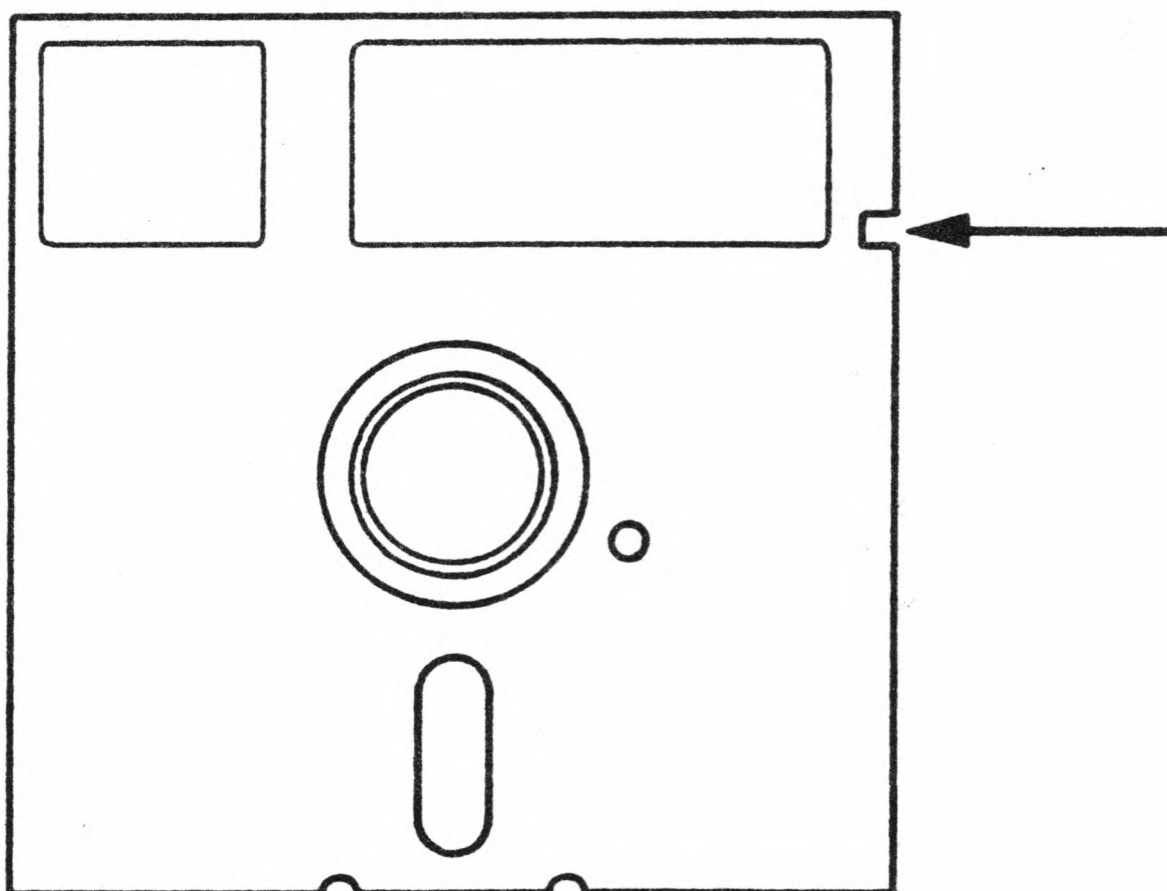
Protection of Data on Streamer Cartridges

To avoid accidentally writing to a streamer cartridge, turn the plastic arrow on the top left hand corner towards SAFE. Turning the arrow in the opposite direction, makes it possible to write to the tape cartridge once more.
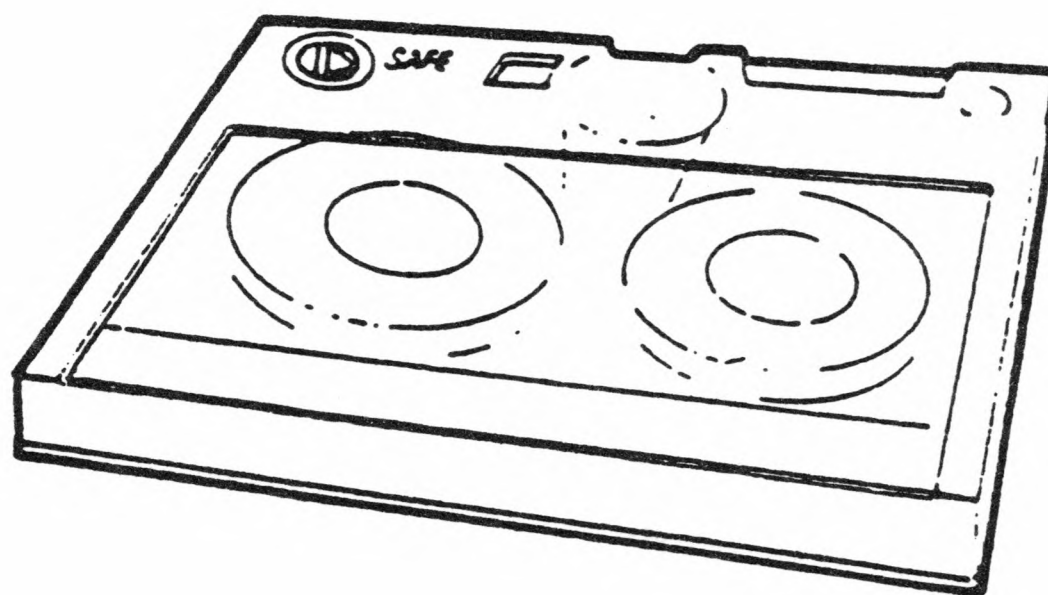
START AND END OF WORK

To begin a normal day's work, the following operations must be performed:

1.   Power on the console workstation. The other peripherals need not necessarily be powered on yet.

2.   Power the system on. Make sure that the initialization, which begins automatically, is performed as described in Section IV in this manual.

3.   When the initialization is finished, a user must login before beginning the normal activities.

To end a day's work, the following operations must be performed:

1.   Make any necessary backup copies.

2.   Shut the system down as described in Section IV in this manual. (See also the procedure described in the "Administrator Reference Manual").

3.   Power off all workstations and printers.

4.   Power the system off.

SYSTEM SOFTWARE INSTALLATION

OPERATIVE DIAGRAM

The following diagram shows the procedures that a user should perform at software installation time. It has been designed taking into account the different situations in which the user may find himself.

```
   ( run_time          )        ( run_time not on  )
   ( on disk           )        ( disk or crash    )
        │                            │
┌───────────────────┐        ┌───────────────────┐
│ o.s. activation or│        │     diskinit      │
│ upgrade procedure │        │                   │
└───────────────────┘        └───────────────────┘
        │                            │
┌───────────────────┐        ┌───────────────────┐
│ system personaliz.│        │    installunix    │
│ procedure (tailor.)│       │                   │
└───────────────────┘        └───────────────────┘
        │                            │
        │                    ┌───────────────────┐
        │                    │ o.s. activation or│
        │                    │ upgrade procedure │
        │                    └───────────────────┘
        │                            │
        └────────────┬───────────────┘
                     │
                  ◇ full system ◇    no     ( end )
                  ◇ installation ? ◇──────
                     │
                    yes
                     │
              ┌───────────────┐
              │    easyconf   │
              └───────────────┘
                     │
                  ( end )
```
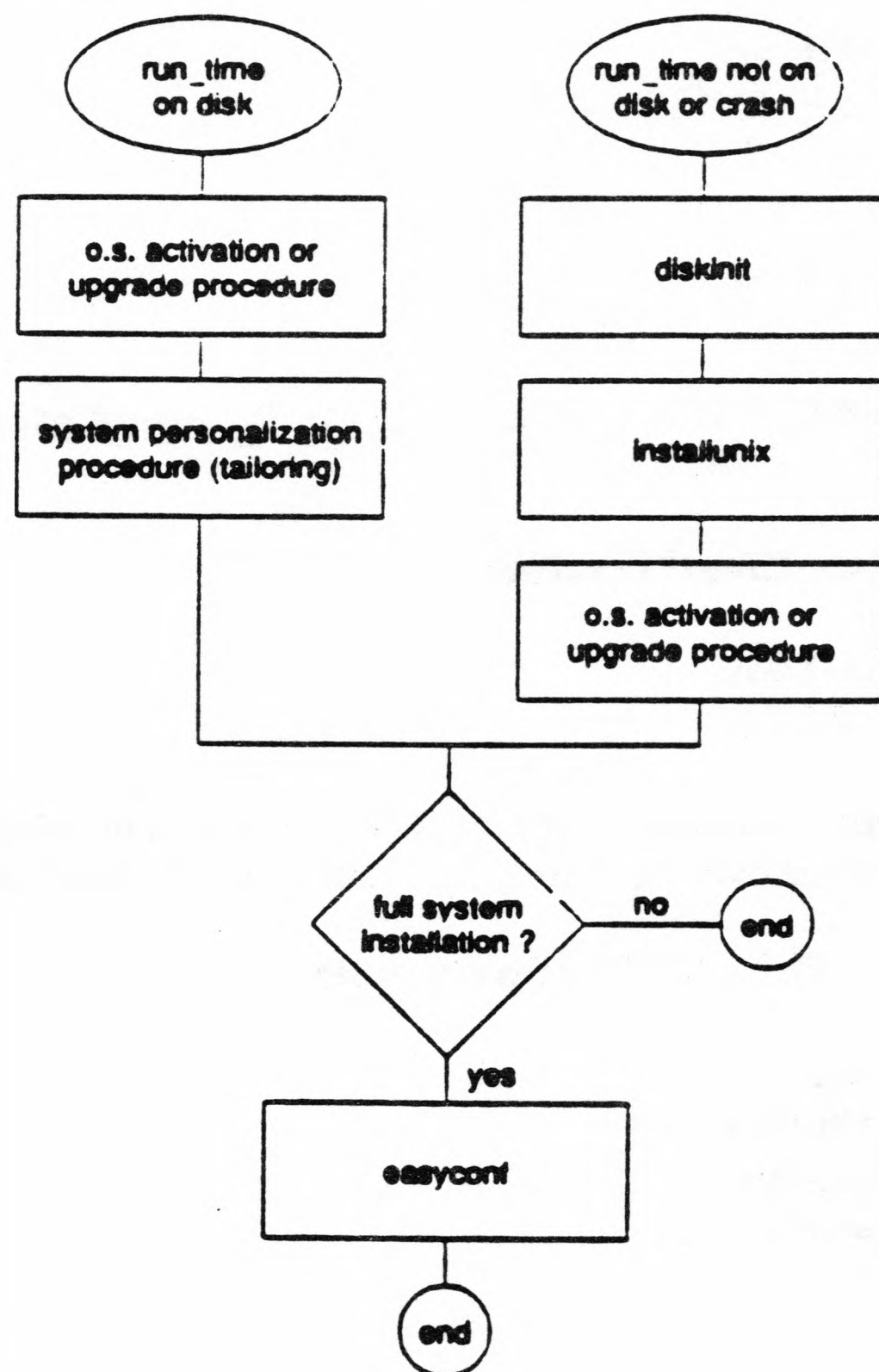
CONTENTS OF THE RUN-TIME AND THE FULL DELTA SYSTEM

The Operating System is composed of two parts: RUN-TIME (PAC1) and FULL DELTA SYSTEM (PAC2). The whole system is available on a kit of diskettes or on tape.

The RUN-TIME system contains sufficient software to launch user application packages. It is composed of the following elements:

Basic System + Kernel extent
Easylife
Selective Back-up
C-Shell
diag
/usr/CONF
tailoring
whatis

Under the RUN-TIME system only the following packages may be installed:

COBOL Run-Time (Microfocus)
BASIC
UNIFY Run-Time
VIP CONNECT

All other application packages must be installed or developed by loading the necessary utilities onto the system.(See "Full Delta System Installation ").

The FULL DELTA SYSTEM is composed of :

Basic Utilities
Advanced Utilities
System Extension
Software Development

The following table describes the contents of PAC1:

Label	Contents		Media Type
boot1	*Kernel + bootstrap*		diskette
boot2	*Save/restore streamer DCS*		diskette
commands	*cat*	*mkfs*	diskette
	checktail	*mknod*	
	cp	*mnttab*	
	cpio	*mount*	
	diskinit	*passwd*	
	echo	*rm*	
	hrestore	*savrest*	
	installunix	*sh*	
	init	*su*	
	inittab	*sync*	
	ln	*tail-dkt*	
	ls	*tailoring*	
	mkdir	*umount*	
boot1-install	*kernel + bootstrap-install*		diskette
DIAGX2	*stand alone testing*		diskette
DDWORK	*double density support diskette for 'diag' tests*		diskette
HDWORK	*high densirty support diskette for 'diag' tests.*		diskette
VOL1-VOLn	*run-time*		diskettes
or			
run-time	*run-time*		tape

The following table describes the contents of PAC2:

Label	Contents	Media Type
BU1	*basic utilities*	diskette
BU2	*basic utilities*	diskette
AU1	*advanced utilities*	diskette
AU2	*advanced utilities*	diskette
AU3	*advanced utilities*	diskette
AU4	*advanced utilities*	diskette
AE1	*administration extension*	diskette
AE2	*administration extension*	diskette
SD1	*software development*	diskette
SD2	*software development*	diskette

or

Label	Contents	Media Type
D.SYSTEM->FULL	*basic utilities*	tape
	advanced utilities	
	administration extension	
	software development	
easylife	*easylife menus delta*	diskette

BASIC STEPS TO PERSONALIZE/INSTALL THE SYSTEM

Before running either of the following procedures, check that every unit has been correctly installed using the *stal* procedure. (See "Loading from Diskette" in the "System Testing Guide " manual).

Go to "Operating System Personalization", unless you need to reinstall the Operating System (e.g. in case of crash). In the latter case go to "Operating System Installation". Both the procedures are described below.

NOTES:

- Once the system is installed only one terminal line is installed, and it is configured as console VTU0010. See *termconf* for further terminal configuration.

- The following nodes are already present in the */dev* directory:

dsk00	rdsk00
dsk01	rdsk01
dsk02	rdsk02
dsk10	rdsk07
dsk11	rdsk10
dsk12	rdsk11
dsk20	rdsk12
dsk21	rdsk17
dsk22	fdsk0
rfdsk0	ifdsk0
tape00	console
tty	rmtu00
rmtu0h	

To create other nodes, see "How to Create Nodes to Support ..." in section V, according to the device you want to create.

Operating System Personalization

1. Activate the Operating System by executing the *Operating System Activation or Upgrade Procedure* described in the document supplied with the relevant diskette.

2. Run the *Tailoring* procedure to customize the basic software configuration according to the hardware configuration. See "Tailoring, Personalizing the Operating System" in this section.

Operating System Installation

1. Format your system disk using the *diskinit* procedure. See "Diskinit: procedure to format a disk or to update slice sizes", in Section VI.

2. Install the Operating System resident on diskette/tape, using the *installunix* procedure. See "Installunix: Operating System Installation Procedure" in this section.

3. Activate the Operating System by executing the *Operating System Activation or Upgrade Procedure* described in the document supplied with the relevant diskette.

Full Delta System Installation

NOTE: The RUN-TIME system must have already been installed.

1. Use the *Easyconf* procedure to install other optional extensions.

2. Install the Delta Easylife. See "Tailoring Easylife - Installation of the Delta Easylife" later in this section.

EASYCONF: MENU DRIVEN PROCEDURE TO INSTALL THE EXTENSIONS TO THE RUN-TIME SYSTEM

Description

The system disk is configured with sufficient functionality to load and execute additional software selected by the user. This fundamental part of the operating system constitutes the run-time system.

The remainder of the operating system is supplied on diskettes or tape, in a set of four extensions. These extensions are:

- **Basic Utilities**
- **Advanced Utilities**
- **Administrator Extension**
- **Software Development**

These extensions form the full delta system. They are optional and the diskettes or tape containing them must be obtained separately. It is important to note that the diskettes may not be write-protected because they will be used by the *mount* command.

Using *easyconf*, which is supplied with the run-time system, any user may add or remove selected parts of the delta system, to or from the system disk. The *easyconf* procedure works through a series of hierarchical menus, in much the same way as *easylife*.

The run-time system is supplied with sufficient *easylife* menus to manage the run-time functions.

To manage the full system, or any extension, it is necessary to augment the run-time *easylife* menus. See "Tailoring Easylife: Installation of the Delta Easylife" later in this section.

CONTENTS OF THE EXTENSIONS

This section contains a complete listing of the functions of the delta system, divided into their relevant extensions.

1   Basic Utilities Extension

The Basic Utilities Extension defines an environment that provides basic user-level functionality. It includes facilities for simple directory and file manipulation, along with facilities for text file editing and processing.

The only prerequisite is:

- The run-time system

UTILITIES

In the directory /bin:

cmp	col	comm	diff
diffmk	dirname	du	file
nohup	red	rmail	spell
sum	tail	tee	

In the directory /usr/bin:

bdiff	calendar	diff3	nl
pack	paste	pcat	split
tr	uniq	unpack	

In the directory /usr/lib/help:

ad	bd	cb	cm
cmds	co	de	default
ge	he	prs	rc
term	un	ut	vc

In the directory */usr/lib/help/lib*:

```
help2
```

In the directory */usr/lib/spell*:

```
hashcheck      hashmake       hlista     hlistb
hstop          spellhist      spellin    spellprog
```

In the directory */etc*:

```
finc           magic
```

2   Advanced Utilities

The Advanced Utilities Extension is intended to be the next expansion step after the Basic Utilities Extension.

Prerequisites are:

- The run-time system
- The Basic Utilities Extension

CONTENTS

In the directory */bin*:

```
bfs            cu             dd         deroff
mesg           newgrp         od         ptx
regcmp         write
```

In the directory */usr/bin*:

300	300s	4014	450
batch	bc	cpset	csplit
ct	dc	dircmp	edit
ex	factor	get	getopt
graph	greek	help	hyphen
id	join	mailx	manprog
newform	news	rjestat	rmdel
sdiff	shl	spline	tabs
tput	units	unittab	uucp
uulog	uuname	uupick	uustat
uuto	uux	vc	vedit
vi	view		

In the directory */usr/lib*:

```
ex3.9preserve  ex3.9recover   ex3.9strings
```

In the directory */usr/lib/uucp*:

L-devices	L-dialcodes	L.cmds	L.sys
L_stat	L_sub	R_stat	R_sub
USERFILE	uucico	uuclean	uudemon.day
uudemon.hr	uudemon.wk	uusub	uuxqt

In the directory */usr/lbin*:

```
atol
```

In the directory */usr/rje*:

cvt	lines	rjedisp	rjehalt
rjeinit	rjeload	rjeqer	rjerecv
rjexmit	shqer	snoop	

In the directory */usr/rjel*:

```
cvt           rjeldisp      rjelhalt      rjelinit
rjelload      rjelqer       rjelrecv      rjelxmit
snoop0        testjob1      testjob2
```

In the directory */usr/lib/mailx*:

```
rmmail        mailx.help    mailx.help.~
```

In the directory */usr/man/local/man1*:

```
ctcr.1
```

3   Administrator Extension

The Administrator Extension is comprised mainly of utilities used for system administration. Many of these utilities are restricted to the super-user.

Prerequisites are:

- The run-time system
- The Basic Utilities Extension
- The Advanced Utilities Extension

UTILITIES

In the directory */bin*:

```
acctcom       ipcrm         ipcs          nice
```

In the directory *usr/bin*:

at   crontab   tplot

In the directory */etc*:

clri   cron   dcopy   dfsck
ff   filesave   frec   fsdb
grpck   labelit   mvdir   ncheck
pwck   volcopy   whodo

In the directory */usr/lib/acct*:

acctcms   acctcon1   acctcon2   acctdisk
acctdusg   acctmerg   accton   actprc1
acctprc2   acctwtmp   chargefee   ckpacct
diskusg   dodisk   fwtmp   holidays
lastlogin   monacct   nulladm   prctmp
prdaily   prtacct   ptecms.awk ptelus.awk
remove   runacct   shutacct   startup
turnacct   wtmpfix

In the directory *usr/lib/cron*:

at.allow   cron.allow   log

4   Software Development Extension

The Software Development Extension provides facilities for the development of C language software. The principal components are the program development and maintenance aids *yacc* and *lex*, and the *Source Code Control System* (SCCS) utilities.

Prerequisites are:

- The run-time system
- The Basic Utilities Extension
- The Advanced Utilities Extension

UTILITIES

In the directory */bin*:

asa	bs	env	fsplit
lex	time	tsort	xargs
yacc			

In the directory */usr/bin*:

:rofix	admin	cb	cdc
cflow	comb	cxref	delta
lint	prs	sact	scc
sccsdiff	sdb	unget	val
what			

In the directory */etc*:

chroot   install

In the directory *usr/lbin*:

ctcr   ctrace

Use

USING THE easyconf MENUS

The *easyconf* procedure is designed to be used by means of a series of hierarchical menus. The entries in a menu are either a further sub-menu, like *<SYSTEM EXTENSION>*, or a directly executable command, like *<FULL SYSTEM REMOVE>*. When an *easyconf* user logs in, the *SYSTEM CONFIGURATION* menu is displayed. From this menu, the user may descend, through the different levels of the menu hierarchy, to the sub-menu in which the required function resides.

When a new sub-menu is displayed, it is overlaid on the previous menu, but offset by one character horizontally to the right, and one character vertically downward. This enables the user to see the name of the previous menu, thus showing how the function fits into the overall structure.

Before selecting an option, the user can move down through the menu by pressing the *j* key. The user can move up by pressing the *k* key. The user can return to the previous menu by pressing the *p* key.

The option currently ready for selection is bracketed and its characters are all changed to upper case. To finalize the selection, the user should press the *<RET>* key. Either the corresponding sub-menu will be displayed, or if the option is a command, execution of the associated procedure will commence.

At different levels in the menus, there may be different command keys available to the user. In any menu, it is possible to check which action is associated with which key, by pressing the tab key to display the complete list.

DEPENDENCES

There is a hierarchical dependence between the delta system extensions. Some new extensions can not be added to the system disk, unless the other extensions, on which the new extensions depend, have been previously loaded.

If the user attempts to add a new extension, and one or more of the extensions on which it depends is absent, the following message will be displayed:

```
ILLOGICAL CONFIGURATION                    type <RET>
```

In order to display the dependences, the user should press *d*. The following mask will be displayed:

```
+-----SYSTEM CONFIGURATION ---+
|                             |
|   <SYSTEM EXTENSION>        |
|   full system remove        |
|   full system load          |
|   +-----------------------------------------+
|   |                                         |
|   |          EXTENSIONS                     |
|   |     1   basic utilities                 |
|   |     2   advanced utilities              |
+-- |     3   administrator extension         |
|   |     4   software development            |
|   |                                         |
|   +-----------------------------------------+
```

DEPENDENCES: INSERT EXTENSION NUMBER <p to escape>

The user should enter the number corresponding to the extension required. Suppose that the user wished to add the <ADMINISTRATOR EXTENSION> and therefore pressed 3. The following message would be displayed:

```
DEPENDENCE: INSERT EXTENSION NUMBER <p for escape>
3: you need 1 and 2
```

The numbers refer to the above display of extensions. The indicated extensions must be added by the user, before attempting to add the extension which depends on them.

DISKETTE PREPARATION

When diskettes are used to save an extension, it is first necessary to prepare each diskette in a precise way. To format the diskette, see *diskinit* in Section VI. The user must then enter the following command:

```
# mkfs /dev/fdsk0 720
```

This command formats each diskette with the same structure as the file system.

EXTERNAL DISKETTE

When an extension has to be loaded into the run-time system, it is not necessary to copy over every diskette. Instead, the user may choose to mount one diskette, in the diskette unit, as an external part of the file system. This diskette is termed the external diskette. By this method, the user may save space on the run-time system disk.

During the load of an extension, for example the Basic Utilities Extension, the following mask will be displayed:

```
LOAD EXTENSION                          BASIC UTILITIES
```

```
DISKETTE 1 :COPY TO SYSTEM <a> EXTERNAL DISKETTE <b>
```

For other extensions, BASIC UTILITIES will be replaced by the name of the selected extension. A similar mask will be displayed for each diskette. The user should press *b* only for the single diskette that is to be mounted as an external part of the file system. Only one diskette may be an external part of the file system. This is so, even if the user has an additional diskette unit.

Suppose the user wished to copy an extension to a backup set of diskettes. This could be done by loading the extension into the run-time system, and then saving the same extension to a new set of diskettes. If one of the diskettes of the extension were nominated as an external diskette, it would not be possible to copy that part of the extension to a new diskette. To inform the user, if this occurred, the following message would be displayed:

```
DISKETTE N IS EXTERNAL. YOU CANNOT CREATE IT. type
<RET>
```

where N is the number of the external diskette.

LAUNCHING AN easyconf SESSION

Before attempting to run *easyconf*, the user should have read "Using Easyconf".

The user may enter *easyconf* in two ways:

- from the shell, when the prompt, #, is displayed, enter:

  # easyconf

- the user may also enter *easyconf* from an *easylife* session; see the "Easylife System Administrator's Guide".

In either case, the following mask is displayed:

```
+-----SYSTEM CONFIGURATION ---+
|                             |
|   <SYSTEM EXTENSION>        |
|   full system remove        |
|   full system load          |
|                             |
+-----------------------------+
```

- <SYSTEM EXTENSION> allows to load onto the system disk or to remove from it one or more extensions. The extensions which are to be removed can also be copied to a set of diskettes or to a tape.

- <FULL SYSTEM REMOVE> allows to remove from the system disk the full delta system and to copy it to a set of diskettes or to a tape.

- <FULL SYSTEM LOAD> allows to load the full delta system onto the system disk.

The user is now running *easyconf*. Three specimen sessions are presented below:

1. In the first, it is assumed that the user wishes to install the *<BASIC UTILITIES>* extension.

2. In the second, it is assumed that the user wishes to load the full delta system.

3. In the third, it is assumed that the user wishes to strip, or remove, the Software Development Extension.

Basic Utilities Installation

In order to copy the Basic Utilities Extension into the system, perform the following steps:

1. In the SYSTEM CONFIGURATION menu, press *<RET>* to select the <SYSTEM EXTENSION> option.

2. The following mask is displayed:

```
+-----SYSTEM CONFIGURATION ---+
|                             |
|    +------SYSTEM EXTENSION-------+
|    |                            |
|    |    <BASIC UTILITIES>       |
|    |    advanced utilities      |
+-- |    administrator extension  |
|    |    software development     |
|    |                            |
+-- +----------------------------+
```

The <BASIC UTILITIES> entry is highlighted to indicate that it is the current option. To check that the relevant software utilities are contained in this extension, press *<RET>*.

3. The following mask is displayed on the right of the screen:

```
+----BASIC UTILITIES-----+
|                        |
|    bdiff               |
|    cmp                 |
|    col                 |
|    comm                |
|    diff                |
|    diffmk              |
|    ·dirname            |
|    du                  |
|    file                |
|    nohup               |
|    spell               |
|    sum                 |
|    tail                |
|    tee                 |
+------------------------+
```

By repeatedly pressing *j*, the user can check through all the commands and libraries contained in this group of diskettes. To return to the SYSTEM EXTENSION menu, press *p*.

4. To select the <BASIC UTILITIES> option, press the space bar.

5. When the *S* is displayed to indicate the selected option, press *z* to accept the system configuration.

6. The following message will be displayed on the bottom line:

   SYSTEM CONFIGURATION ACCEPTED <RET> for update <p> for escape

   Press *<RET>* to start the load procedure.

7. The following mask will be displayed:

LOAD EXTENSION   **BASIC UTILITIES**

COPY FROM DISKETTES <a> COPY FROM TAPE <b>

Press *a* if you are going to copy from diskettes. Go to Step 8.

Press *b* if you are going to copy from tape. Go to Step 11.

8. The following mask will be displayed:

LOAD EXTENSION   **BASIC UTILITIES**

DISKETTE 1 :COPY TO SYSTEM <a> EXTERNAL DISKETTE <b>

Press *a* to copy the diskette to the system.

9. The following mask will be displayed:

LOAD EXTENSION   **BASIC UTILITIES**

INSERT BU1 type <RET>

Find the diskette labelled BU1. Insert it in the diskette unit and press **<RET>**.

10. While the process is executing, the following message will be displayed:

    RUNNING

    There will be further messages requesting the user to insert subsequent diskettes of the extension. Steps 8 e 9 should be repeated until all the diskettes of the BASIC UTILITIES extension have been copied to the system. When the last diskette has been copied to the system, the SYSTEM CONFIGURATION menu will be redisplayed.

11. If you selected copying from tape, the following mask will be displayed:

    LOAD EXTENSION   BASIC UTILITIES

    INSERT the 'D.SYSTEM->FULL' tape type <RET>

    Insert the 'D.SYSTEM->FULL' tape into the streamer unit and press **<RET>**.

12. While the process is executing , the following message will be displayed:

    RUNNING

    When the whole extension has been copied to the system, the menu SYSTEM CONFIGURATION will be redisplayed.

Full System Installation

When the user wishes to load the full operating system onto the system disk, there may be two possibilities:

- No part of any extension has been added to the run-time system.

- One or more extensions, for example the <BASIC UTILITIES> extension, have already been added to the run-time system.

In either case, if you are going to load from diskettes, the <FULL SYSTEM LOAD> procedure will request only those diskettes that remain to be added.

The user should enter *easyconf*, and wait until the SYSTEM CONFIGURATION menu is displayed. Then, perform the following operations:

1. Press *j* twice to move down to the <FULL SYSTEM LOAD> option.

2. Press <*RET*> to select the <FULL SYSTEM LOAD> option.

3. The following message will be displayed on the bottom line:

   SYSTEM CONFIGURATION ACCEPTED <RET> for update <p> for escape

   Press <*RET*>.

4. The following mask will be displayed:

   LOAD DELTA SYSTEM -> FULL

   COPY FROM DISKETTES <a> COPY FROM TAPE <b>

   Press *a* if you are going to copy from diskettes. Go to Step 5.

Press *b* if you are going to copy from tape. Go to Step 9.

5. Assuming that no extensions have already been added, the following mask will be displayed:

LOAD EXTENSION   BASIC UTILITIES

DISKETTE 1 :COPY TO SYSTEM <a> EXTERNAL DISKETTE
<b>

Press *a* to copy the diskette to the system.

6. The following mask will be displayed:

LOAD EXTENSION   BASIC UTILITIES

INSERT BU1 type <RET>

Find the diskette labelled BU1. Insert it in the diskette unit and press <RET>.

7. While the process is executing, the following message will be displayed:

RUNNING

There will be further messages requesting the user to insert subsequent diskettes of the extension. Steps 5 e 6 should be repeated until all the

diskettes of the BASIC UTILITIES extension have been copied to the system.

8. When the last diskette of this extension has been copied to the system, processing will start on the next extension. When the last diskette of the last extension has been copied to the system, the SYSTEM CONFIGURATION menu will be redisplayed

    At this point, the user has loaded the full system to the file system. Note that it will be necessary to augment easylife to manage the extended system.

9. If you selected copying from tape, the following mask will be displayed:

    ```
    LOAD DELTA SYSTEM -> FULL
    ```

    ```
    INSERT the 'D.SYSTEM->FULL' tape  type <RET>
    ```

    Insert the 'D.SYSTEM->FULL' tape in the streamer unit and press *<RET>*.

10. While the process is executing , the following message will be displayed:

    ```
    RUNNING
    ```

11. When all the extensions have been copied to the system, the SYSTEM CONFIGURATION menu will be redisplayed:

    At this point, the user has loaded the full system to the file system. Note that it will be necessary to augment *easylife* to manage the extended system.

Removing The Software Development Extension

It is assumed in the following session that all the extensions have been previously added to the file system.

To remove the Software Development Extension from the system disk, the user should enter *easyconf* and perform the following steps:

1. Select the <SYSTEM EXTENSION> option.

2. The following mask is displayed:

```
+-----SYSTEM CONFIGURATION ---+
|                             |
|    +-------SYSTEM EXTENSION---------+
|    |                                |
|    |   <BASIC UTILITIES>         $  |
+-- |    advanced utilities        $  |
|    |    administrator extension   $  |
|    |    software development      $  |
|    |                                |
|    +--------------------------------+
```

Press *j* three times to move to the <SOFTWARE DEVELOPMENT> option and then press the space bar to deselect it.

3. When the *$* is removed to indicate that the option is no longer selected, press *z* to start the strip procedure.

4. The following message will be displayed on the bottom line:

SYSTEM CONFIGURATION ACCEPTED <RET> for update <p> for escape

Press <*RET*>.

5. The following mask will be displayed:

COPY DISKETTES <a> REMOVE ONLY <b> COPY TO TAPE <c>

Press *b* followed by *<RET>*.

6. The following mask will be displayed:

    STRIP EXTENSION   SOFTWARE DEVELOPMENT

    CONFIRM REMOVE ONLY y/n

    Press *y* to confirm that the extension is only to be removed, and not copied to a new set of diskettes or to a tape.

7. While the process is executing, the following message will be displayed:

    RUNNING

    Eventually, this message will disappear and the SYSTEM CONFIGURATION menu will be redisplayed. The user should press *p* to exit.

INSTALLUNIX: OPERATING SYSTEM INSTALLATION PROCEDURE

Description

This procedure is used to load the operating system to disk from diskettes or tape. Only the diskettes or tape supplied with the system may be used to perform this procedure.

Use

1. Initialize the system from diskette (BOOT1). See "Initialization from Diskette" in Section IV.

2. If the disk on which the operating system will be loaded has not been previously formatted as boot device, or if it is necessary to update the bad block map, run the *diskinit* procedure. See "Diskinit" in Section VI.

3. When the prompt is displayed, enter the following command:

    # ./installunix

    The following mask will be displayed:

    ```
          I N S T A L L U N I X

    1 - W R E N 2    ( ST506 )
    2 - W R E N 3    ( ESDI )
    3 - M A X T O R  ( ESDI )

    Option selected ->
    ```

4. Enter the number corresponding to the disk to be used. The following mask will be displayed:

```
            I N S T A L L U N I X

            1 - FLOPPY / TAPE D C S

            2 - FLOPPY / TAPE D C E

Option selected:
```

5. Enter the number corresponding to the floppy/tape controller present in your configuration and press <RET>. The following messages will be displayed:

```
THIS procedure will completely delete any content
on the hard disk.
ARE you REALLY sure of what you are doing (y or n)
? ->
```

6. If you want to terminate the procedure, enter *n* and press <RET>. The system prompt will be displayed. Otherwise enter *y* and press <RET>. The following messages will be displayed:

```
making file system ...
   ........done
moving files from floppy to disk.....

....done

FIRST PART of installation is finished.
NOW you can bootstrap from BOOT1-INSTALL diskette
and go on with the second part of installation.
SEE YOU LATER...
```

7. Reset the system and initialize using the diskette labeled BOOT1-INSTALL.

The following messages will be displayed:

```
What is your root device?  1 = ESDI   2 = ST506

Insert your choice --->
```

8. Enter 1 for ESDI, 2 for ST506 and press *<RET>*. The following will be displayed:

```
    OPERATING        SYSTEM
          based on
    AT&T's UNIX(TM) O.S.
and subset of SYSTEM V Rel 3.0

processor type          = ......
total physical memory = ...... bytes
user available memory = ...... bytes

INIT: SINGLE USER MODE


     I N S T A L L U N I X _ D I S C


     1 - RUNTIME    D I S K E T T E

     2 - RUNTIME    T A P E

Option selected ->
```

NOTE: During both diskette or tape loading, a message like: `"... errno 26, text file busy"` may be displayed. If this occurs, the message is to be ignored.

9. If your runtime system is on diskette, enter 1, press *<RET>* and go to Step 10. Otherwise enter 2, press *<RET>* and go to Step 11.

10. The following message will be displayed:

```
INSERT the first RUNTIME diskette and press return
```

10.a Insert the first diskette and press *<RET>*.

For each subsequent diskette to be inserted, the following message will be displayed:

```
errno: 0, can't read input
Reached end of medium on input.
Change to part X and press return key. [q]
```

where X is the number of the diskette required by the procedure.

10.b Insert the diskettes one at a time, according to the sequence number on the diskette label. When the last diskette has been unloaded go to Step 12.

11. The following message will be displayed:

```
INSERT the RUNTIME tape and press return
```

Insert the tape and press <RET>. When the tape has finished unloading, go to Step 12.

12. The following messages will be displayed:

```
xxxx blocks
```

```
YOUR system is ready for operation
SECOND part of installation is finished.
```

```
Now you must bootstrap from hard disk and
after you can go on with your job !!!!
```

```
------------> END OF INSTALLUNIX_DISC <------------
```

The *Installunix* procedure has finished. Shut down the system and perform the *Operating System Activation Procedure*. If the final messages are not displayed, repeat the procedure.

Operating System Activation Procedures

This procedure is used to configure the system in terms of:

- The number of users
- The number of CPU's
- Full or Run-time software

The procedure use one of the following diskettes:

Mono CPU:

```
INST.USER 4/1/R      Runtime system 4 users
INST.USER 16/1/R     Runtime system 16 users
INST.USER 32/1/R     Runtime system 32 users
INST.USER 16/1/F     Full system 16 users
INST.USER 32/1/F     Full system 32 users
```

Dual CPU:

```
INST.USER 16/2/R     Runtime system 16 users
INST.USER 32/2/R     Runtime system 32 users
INST.USER 64/2/R     Runtime system 64 users
INST.USER 16/2/F     Full system 16 users
INST.USER 32/2/F     Full system 32 users
INST.USER 64/2/F     Full system 64 users
```

Identify the diskette and execute the following operations:

1. Insert the BOOT1 diskette into the diskette unit and press the RESET button on the control panel. When the COMMANDS diskette is requested, insert the diskette that was supplied with the system.

2. The following mask will be displayed:

```
Select the appropriate DISK INTERFACE

        1 - (ST506)

        2 - (ESDI)

Option selected ->
```

Enter the number corresponding to the type of disk you have.

3. The following message will be displayed:

```
Now you can bootstrap from hard disk.
```

4. The system will be automatically powerd off and must then be powed again.

WARNING

During the first automatic initialization from disk answer y to the file system check request. The system may request a new reinitialization, because the previous system shutdown has not been correctly performed. In this case, reinitialize the system by pressing the RESET button on the control panel and ignore the message that appears.

TAILORING: PERSONALIZING THE OPERATING SYSTEM

WARNING

Before executing the TAILORING procedure read the following notes and perform the *Operating System Activation or Upgrade Procedure* supplied with the relevant diskette.

Description

A backup copy of the RUN TIME operating system is supplied together with the system; if the version of RUN TIME on the diskette/tape is more recent than the disk version, the backup copy of RUN TIME must be loaded. This procedure enables the update levels of the two disks to be compared and, if necessary, it allows the diskette/tape version of the RUN TIME operating system to be loaded.

NOTES:

- This procedure must be executed immediately after the system has been installed and the initial diagnostic tests have been carried out to determine the correct operation of the system installation.

- This procedure will only work if the RUN TIME operating system is present on the disk. It must only be executed after initial installation of the system. If you execute this procedure when the full system is present on the disk, the delta system will be removed to avoid differences between the upgrading level of RUN TIME and DELTA SYSTEM.

- Al references to *tape* in this procedure, refer to a streamer cartridge tape.

Use

1. Initialize the system from the diskette BOOT1. See "Initialization from Diskette" in Section IV.

2. When the prompt is displayed, enter the following command:

   ```
   # tail_dkt
   ```

3. The following mask will be displayed:

   ```
              T A I L_D K T

              1 - ST506

              2 - ESDI

   Option selected ->
   ```

4. Enter the number corresponding to the disk to be used. The following mask will be displayed:

   ```
              T A I L _ D K T

         1  -  FLOPPY / TAPE  D C S

         2  -  FLOPPY / TAPE  D C E

   Option selected ->
   ```

5. Enter the number corresponding to the controller on which the floppy/tape was connected and press <RET>.

The following message will be displayed:

```
FIRST PART of personalization is finished.
NOW you can bootstrap from BOOT1_INSTALL diskette
and go on with the second part of personalization.
```

6. Reset the system and initialize using the diskette labeled BOOT1-INSTALL.

7. The following message will be displayed:

```
What is your root device?  1 = ESDI   2 = ST506

Insert your choice --->
```

8. Enter 1 for ESDI, 2 for ST506 and press *<RET>*. The following will be displayed:

```
     OPERATING        SYSTEM
           based on
       AT&T's UNIX(TM) O.S.
and subset of SYSTEM V Rel 3.0

processor type         = ......
total physical memory = ...... bytes
user available memory = ...... bytes

Console login:
```

9. Login as *root*.

When the prompt is displayed, enter the following command;

```
# tailoring
```

The following mask will be displayed:

```
                   T A I L O R I N G

              1 - FROM   D I S K E T T E

              2 - FROM   T A P E

     Option selected ->
```

NOTE: During both diskette or tape loading, a message like: "... errno 26, text file busy" may be displayed. If this occurs, the message is to be ignored.

10.   If the RUN TIME is on diskette enter 1. If it is on tape, enter 2.

One of the following two messages will be displayed, according to the previous reply:

*   `INSERT the first RUNTIME diskette and press return`
*   `INSERT the RUNTIME tape and press return`

11.   Insert the diskette or the tape, according to the request. Press *<RET>*.

One of the following three situations may occur:

a)   The Operating System on the disk and that on the diskette/tape may have the same update level. The following messages are displayed:

```
*** YOUR SYSTEM IS AT THE LAST LEVEL UPDATE ***
*** E N D   O F   T A I L O R I N G ***
```

Remove the diskette/tape from the unit. The *Tailoring* procedure is terminated.

b)   The Operating System on the disk has a more recent update level than that of the diskette/tape. The following messages are displayed:

```
****** ATTENTION :

****** YOUR TAPE/DISKETTE IS NOT AT THE LAST LEVEL
UPDATE ******

*** E N D   O F   T A I L O R I N G ***
```

Remove the diskette/tape from the unit. The *Tailoring* procedure is terminated.

c)   The Operating System on the diskette/tape has a more recent update level than that of the disk. The diskette/tape version of the operating system will be loaded onto the disk.

The following messages will be displayed:

```
****** YOUR SYSTEM IS NOT AT THE LAST LEVEL UPDATE
******
****** UPDATE PROCEDURE IN PROGRESS ******

INSERT the COMMANDS VOLUME diskette and press
return
```

Insert the diskette labeled COMMANDS and press <RET>. If the RUN TIME is on diskettes go to Step c.1 if it is on tape, go to Step c.2.

c.1   The following message will be displayed:

```
INSERT the first RUNTIME diskette and press return
```

Insert the first diskette and press *<RET>*.
For each subsequent diskette to be inserted, the following message will be displayed:

```
errno: 0, can't read input
Reached end of medium on input.
Change to part X and press return key. [q]
```

where **X** is the number of the diskette required by the procedure.

Insert the diskettes one at a time, according to the sequence number on the diskette label (VOL1-VOLn). When the last diskette has been unloaded go to Step 12.

c.2   The following message will be displayed:

```
INSERT the RUNTIME tape and press return
```

Insert the tape and press <RET>. When the tape has finished unloading, go to Step 12.

12.   The following messages will be displayed:

```
xxxx blocks

NOW you must bootstrap from hard disk and
after you can go on with YOUR JOB !!!
****** E N D   O F   T A I L O R I N G ******
```

13.   Shut down the system by entering the following commands:

```
# sync
# sync
# sync
```

14.   Reinitialize the system.

TAILORING EASYLIFE: INSTALLATION OF THE DELTA EASYLIFE

Description

The first time that an extension of the Full System (Basic Utilities, Advanced Utilities, Administrator Extension, Software Development) is to be loaded to the system disk, the loading procedure for Delta Easylife Menus must be performed.

In this way, *easylife* can handle the Full System extension that has been loaded (see the relevant manual).

Use

1. Initialize the system from disk and login as *root*.

2. When the shell prompt is displayed, enter the following command:

    `# tailoring easylife`

3. The following message will be displayed:

    ```
    ------------------------------------
    |        T A I L O R I N G        |
    ------------------------------------
    ```

    `** mount the diskette Vol."EASYLIFE" and type RETURN`

4. Insert the diskette labeled EASYLIFE in the unit and press <RET>.

    When the procedure is completed, the following message is displayed:

    `*** E N D  O F  T A I L O R I N G ***`

5. Remove the diskette from the unit.

SECTION IV

SYSTEM INITIALIZATION AND SHUTDOWN PROCEDURES

INITIALIZATION FROM DISK

Description

To initialize the system means to transfer the operating system from the system disk to main memory. This allows the user to use both his own applications and the functions offered by the system.

During the initialization stage, one file is loaded onto each station processor and two files onto each line processor present on the system.

All these files are contained in the *boot* directory. The following files are always present in this directory:

Xlboot
Xlbootxx
unix-SP   for SP0 and SP1
unix-LP0   for LP0
unix-LP1   for LP1

NOTE: For Wren2 ST506 and Maxtor/Wren3 ESDI disks, the relationship between the position occupied by the disk in the system and the disk number is the following:

Use

Check that there are no diskettes in the diskette unit.

If the system is off, switch on the console and the system: the AC PRESENT indicator will light up. Press the POWER ON and RESET buttons on the Control Panel. If the system is already on (the DC ON indicator on the Control Panel is lit), check that the console is on and press RESET on the Control Panel.

AUTOMATIC INITIALIZATION

WARNING

If the user accidentally presses <RET> or enters an invalid character immediately after the system startup message, the following message will be displayed:

```
Do you want to interrupt the
automatic bootstrap? (y or n[o])
```

Enter *n* and press <RET>.

1. With this type of initialization, the standard files are loaded. The following messages will be displayed:

```
System Startup Version 2.1
Automatic System Boot Sequence Started

    OPERATING  SYSTEM
           based on
    AT&T's UNIX(TM) O.S.
and subset of SYSTEM V Rel 3.1

processor type:            = ...
total physical memory:     = ...
user available memory:     = ...
(date)
Do you want to check the file systems? (break
if not)
```

2. If you do not wish to perform the file system check, press <break> or the corresponding key. Otherwise, wait a few seconds; a series of messages referring to the check being performed will be displayed while the file system check is in progress:

```
WARNING!! -mounting: < > as </tmp>
WARNING!! -mounting: < > as </usr>
```

The following prompt will then be displayed:

```
Console login:
```

3. You should enter a valid login name to start a working session.

INTERACTIVE INITIALIZATION

By default, when the system is initialized, the various processors (CPU, SP0, etc.) are loaded automatically with standard files (*/unix*, */boot/unix-SP*, etc.). If the user wishes to load one or more of the processors with a file that is different from the default file, the interactive initialization should be used.

When this type of initialization is used, the user must enter one at a time all the pathnames of the files to be loaded onto the processors on the system.

1. To start the interactive initialization, press *<RET>* within ten seconds of the following initialization message being displayed:

    ```
    System Startup Version 2.1
    ```

    The automatic initialization will thus be interrupted and the following message will be displayed:

    ```
    Do you want to interrupt the automatic Boot?
    (y[es] or n[o])
    ```

2. Enter y and press *<RET>*. An interactive initialization procedure, with self explanatory messages to guide the user, will then be run.

    It will only be necessary to enter a response if non-default files are to be loaded. If this is not the case, press *<RET>* and the default files will be loaded.

NOTE: If the user has a dual-CPU System, the initeractive initialization asks if both the CPUs are to be used.

Example

After having interrupted the automatic initialization, a message similar to the following will be displayed:

```
STATION PROCESSOR 0 will be loaded from:
                    ST506    slice 0    drive 0
            filename:  /boot/unix-SP

Is that correct? (y[es] or n[o])
```

To keep the default values the reply must be *y*.

If the user replies n, the system prompts for a value for each item and displays each possible value:

```
Disk Controllers Present :
            O = ST506        [FIRST controller]
            2 = ESDI         [FIRST controller]
    Select number  :
    Drive (0-7)    :
    Slice (0-7)    :
    Filename
```

3. After the interactive initaialization phase has been completed, the auotomatic initalization restarts.

Errors

During initialization, a series of flashing characters will be displayed on the control panel screen, indicating that the procedure is running correctly. If an error is detected, similar flashing characters on the screen will indicate the type of error that has occurred.

If the error is detected during the interactive stage with the user, then the following flashing characters may appear:

A0   *Communication processor 0 (SP0 0 or LP0 0) has not been installed.*

A1   *Problems on the console line.*

A2   *Interruption during loading of the code.*

A3   *Error during dialog between EPROM and communication processor (SP0 or LP0).*

A5   *Code being loaded onto an unrecognised communication processor.*

If the error is detected in the routine:

1C   *Invalid address.*

1D   *Illegal instruction.*

1E   *Bus error.*

SHUTTING DOWN THE SYSTEM AFTER INITIALIZING FROM DISK

Description

To shut the system down means to end all current activities. Once this phase is completed, only the indicator lamp, AC PRESENT, remains lit on the control panel.

Use

To shut the system down, press the STANDBY button on the control panel. This starts the automatic shutdown procedure for the system.

NOTE

When the STANDBY button is pressed, the system does not enter single-user mode. Therefore if the user wants to enter single-user, the shutdown command described in the Administrator Reference Manual.

The following messages will be displayed on all active terminals to warn users of the imminent shutdown of the system:

```
Broadcast Message from root (console)  Date .....

PLEASE LOGIN OFF NOW ! ! !

All processes will be killed in ... seconds
```

The following messages will be displayed on the console:

```
SHUTDOWN PROGRAM
(date)
```

```
Busy out (push down) the appropriate
phone lines for this system.
```

```
INIT: New run level: 0
System services are now being stopped.
```

```
All currently running processes will now be
killed.
```

```
System is down
```

All activities on the system are now closed and the processes terminated.

INITIALIZATION FROM DISKETTE

Description

When the system is being initialized from diskette, only the commands and procedures contained on the diskette are loaded into memory.

Use

1. Insert the initialization diskette BOOT1 that has been supplied with the system. Initialize the system by pressing the POWER ON and RESET buttons on the control panel. The following messages will be displayed:

   ```
   System Boot Sequence Completed

   Please insert COMMANDS VOLUME and hit return
   to continue
   ```

2. Insert the COMMANDS diskette and press <RET>. The following messages will be displayed:

   ```
   OPERATING        SYSTEM
            based on
       AT&T's UNIX(TM) O.S.
   and subset of SYSTEM V Rel 3.0

   processor type          = ......
   total physical memory = ...... bytes
   user available memory = ...... bytes

   INIT: SINGLE USER MODE
   ```

   Do not enter any more commands until the shell prompt is displayed. At the end of this operation, the initialization procedure is completed.

SHUTTING DOWN THE SYSTEM AFTER INITIALIZING FROM DISKETTE

To correctly shut down the system when initialized from diskette, enter the following commands, waiting each time for the prompt signal, #:

# sync	Press <*RET*>
# sync	Press <*RET*>
# sync	Press <*RET*>

On the control panel, press RESET to reinitialize, or POWER OFF to turn off the system.

SECTION V

SYSTEM CONFIGURATION PROCEDURES

TERMCONF: PORT PERSONALIZATION PROCEDURE

Description

When the system is delivered, only the console is enabled: all other ports are disabled.

Termconf may be used by a super-user to enable or disable a port. It may also be used to personalize a printer in serial mode. Note that when enabling ports, it is also possible to define the *type* and *gettydef* parameters of the workstation or printer connected to that port.

Use

The command may be used in one of the following ways:

```
# termconf
# termconf [-n] line-name
# termconf [-t] type-name
```

where:

termconf	executes the procedure, using the current value of the TERM variable as the terminal definition.

```
termconf -n line-name
```
where line-name is the name of the terminal in use. In this way, the TERM variable, containing the termina definition, is set automatically. After setting the variable, execute logout; the modification takes effect at the new login.

```
termconf -t line-type
```
where line-type is the type of terminal in use and must be consistent with the types of terminal defined in terminfo. In this way, the TERM variable, containing the terminal definition, is set automatically. After setting the variable, execute logout; the modification takes effect at the new login.

If the launching of the command is followed by an option, the message below is displayed:

```
WARNING: after termconf logout and login
         <RET> to continue
```

This indicates that the name or type of terminal that has been set with the command will only take effect after a logout has been executed. The new type will only be effective after the next login.

CORRESPONDENCE TERMINAL - LINE-NAME - LINE-TYPE

TERMINAL	LINE-NAME	LINE-TYPE
VIP72XX	vip72xxx	hw72
VTU001X	vtu0010	hw10
VTU004X	vtu0040	hw40
VTU005X	vtu0050	hw50
HDS72XX	wyse50	wyse50
(*) HDS74XX	vt100	vt100
	vt200	vt200

(*) for the HDS74XX, line-name and line-type depend on the personalization (vt100 or vt200).

After the command has been launched and after each selection, a mask is displayed. The following commands control the masks for this procedure:

<↑> <↓>   to move the cursor to a menu option

<return>   to select an option

<p>   to return to the previous menu

<Control> <l>   to correct the masks for the procedure, where they are incorrectly displayed.

The following mask will be displayed:

TERMCONF

```
    TERMINAL CONFIGURATION
      - Exit program
      - Enable
      - Disable
      - Change characteristics of a terminal
      - List of working lines
```

Enter:

Exit program   to exit from the procedure

Enable   to enable a port and to define the characteristics of a port

Disable   to disable a port

Change   to change the characteristics of a port, the
characteristics   gettydef parameters, the type and to set a
of a terminal   serial printer

list of working   to obtain a list of the enabled ports.
lines

Select the required operation and go to the relevant paragraph. To leave the procedure, select Exit program.

ENABLE

The following mask will be displayed:

```
TERMCONF

    TERMINAL  CONFIGURATION

        BOARDS
        - station proc  0
        -  . . . . . . . . . . . . . . .
```

A list of the station/line processors present in the system will be displayed. Select the board to which the port to be enabled is connected: a list of the ports present on the board will be displayed on the right of the screen.

Select the port(s) to be enabled and press <RET>. The following message will be displayed:

```
Do you accept default type=VTU0010 and getty
label=9600 for ttyNX (y/n)?
```

If the type of terminal to be enabled is VTU0010 and its getty label is 9600, enter y and press <RET>. The initial selection mask will be displayed. Otherwise, enter n and press <RET>. The following mask will be displayed:

```
TERMCONF

    TERMINAL CONFIGURATION

        BOARDS

            CHANGING PARAMETERS
            - Type
            - Gettydefs label
            - All of these
```

Select:

Type   to change the type of terminal and go to Step 1.
Gettydefs   to change the speed and go to Step 2.
All of these   to change both type and speed. See Step 2 and Step 1.

1.   A mask similar to the following will be displayed:

                    POSSIBLE TERMINAL TYPE
                    - VTU0010
                    - VIP72xxx
                    - VTU0050
                    - WYSE50
                    - VT100
                    - VT200
                    - serial printer
                    - Other kind of terminal

Position the cursor on the type of terinal you wish to enable and press
<RET>.

If Other kind of terminal is selected, the following message is
displayed:

     Enter the label that identifies the new
     terminal in terminfo

Enter the identifier for the type of terminal in *terminfo* and press <RET>.
If the identifier is not provided for in *terminfo*, the following message is
displayed:

     This type is not present in TERMINFO

2. A mask similar to the following will be displayed:

```
POSSIBLE LABEL
  - 9600
  - 300
  - 1200
  - 2400
  - 4800
  - 19200
  - 38400
  - LPLABEL
```

Select the speed or the LPLABEL for the serial printer.

DISABLE

The following mask will be displayed:

```
TERMCONF

    TERMINAL CONFIGURATION

        BOARDS
          - station proc 0
          - .............
```

A list of the Station/Line Processor present in the system is displayed. Select the board to which the port to be disabled is connected. Select the port(s) to be disabled and press <RET>. The initial selection screen will be displayed.

NOTE: The console cannot be disabled. In fact, if port 0 is selected, the following message will be displayed:

```
you can't disable console
```

If you want to change type of console run the changing phase.

CHANGE CHARACTERISTICS OF A TERMINAL

NOTE: Only the *type* characteristic may be changed for the console.

The following message will be displayed:

```
Enter terminal you want to change characteristic:
```

Enter the identifier of the port to be changed. See "Table C" in "Appendix A". Press <RET>.

The following mask will be displayed:

```
TERMCONF

    TERMINAL CONFIGURATION

        CHANGING PARAMETERS
         - Type
         - Gettydefs label
         - All of these
```

See Step 1 and 2 described before in "Enable".

SERIAL PRINTER

Termconf may be used to automatically personalize a printer in serial mode. The printer must be set up for the serial interface. To set the microswitches of the printer, see the relevant printer manual.

If the port to which the printer is connected is already enabled, select Change characteristics of a terminal. Otherwise, select Enable, the port to which the printer is connected and change characteristics to terminal. Then proceed with below.

Select to the option All of these. The following mask will be displayed:

```
TERMCONF

    BOARD

        CHANGING PARAMETERS

            POSSIBLE LABEL
            - 9600
            - 300
            - 1200
            - 2400
            - 4800
            - 19200
            - 38400
            - LPLABEL
```

Select LPLABEL. The serial label for the printer is thus selected. A warning message is displayed to tell that "serial type" must also be set :

WARNING: no automatic update of slp type

TERMCONF

BOARD

CHANGING PARAMETERS

POSSIBLE TERMINAL
- **VTU0010**
- **VIP72xxx**
- **VTU0040**
- **VTU0050**
- **WYSE50**
- **VT100**
- **VT200**
- **serial printer**
- **Other kind of terminal**

Select serial printer. The printer is now set to serial mode. A message is displayed, indicating that the serial "label" for the printer must also be set (previous operation):

WARNING: no automatic update of slp label

CONFIG: SYSTEM CONFIGURATION PROCEDURE

Description

Config is a program that uses the Operating System description to generate the necessary information for configuring the Operating System. This includes hardware, drivers and parameter specifications.

The super-user can automatically perform the following operations via the *config* command:

- read and alter the system configuration. It is possible to install the communications packages available for the system (LAN, LVIP, SNA, BSC) on specified boards.

- alter any tunable parameters in the system.

- generate and install a new kernel containing the alterations made.

This program uses two files which contain information regarding the configuration of the system and any elements that are dependent upon the configuration (tunable parameters). As default input, the program uses the */usr/CONF/master* and */usr/include/sys/system.h files*:

- the file *master* provides information about the devices that enable the configuration file to be generated. In fact, this file contains instructions for checking the configuration of hardware and software drivers, parameters and pseudonyms.

- The file *system.h* provides the user's system with information relative to the hardware configuration and to system-dependent parameters.

To use files other than the default files for input (files of the same type but with different names), their pathname must be specified at the moment when the command is launched, as indicated in "Use".

As output, the program uses the file */usr/CONF/cpu/cf/conf.c* , in which it saves the system configuration table obtained when the program has been run.

Every time the system configuration is modified or the tunable parameters are altered, the configuration files must be updated; the kernel currently residing in the system must be replaced with a kernel containing the alterations made. "Install Unix Kernel" first of all saves the kernel present in the */usr/unix...* file (... represents the date). It then generates and installs a new kernel in which all the new information is stored. If, after having modified the configuration, the user exits the program without generating the kernel, the changes are not saved and the following message is displayed:

```
No Changes are made in your Configuration
```

Use

The *config* command has the following syntax:

```
config [-c] [-m mfile] [sfile]

config [-m ] [sfile]
```

The parameters indicated are optional and enable the following operations to be performed:

-c   With this option, the command performs a check
            on the contents of the "master" file.

-m   This option must be followed by the pathname of the file *master*
            (mfile). The pathname of the file *system.h* (sfile) may be
            indicated after master file.

mfile   This is the pathname of the file *master*. If mfile does not exist, it
            is created in the */usr/conf* directory, with all the default values
            of the *usr/CONF/master* file.

sfile   This is the pathname of the file *system.h*.

After entering the command, the initial selection screen will be displayed:

```
                    UNIX CONFIGURATION

         1-     Configuration Definition

         2-     Updating Tunable Parameters

         3-     Install Unix Kernel

         q-     Quit


         Please Enter Your Choice -->
```

Enter:

1   to read and alter the current configuration
2   to alter any tunable parameters in the system
3   to generate and install in the system a new kernel containing the modifications made
q   to exit from the procedure.

Press *<RET>* and go to the relevant section.

NOTE: If either an HDS71XX or an HDS74XX terminal is used, the <home>, <↑> and <↓> arrow keys are replaced by the following sequences:

```
<home> = <esc> <H>
<↑> = <esc> <A>
<↓> = <esc> <B>
```

CONFIGURATION DEFINITION

CONFIGURATION DEFINITION is used to select any packages to be added to or removed from the current system configuration. The configuration table is displayed indicating the current system configuration. The labels PRESENT or ABSENT are displayed next to each element in the table, indicating whether that element is present on the system. The user can thus select which element will be included in the configuration. The configuration table remains on the screen until all the operations in CONFIGURATION DEFINITION have been executed. The table is automatically updated each time an alteration is made.

NOTES

- Before installing a package, check that all the libraries that enable the package to be included in the configuration exist. If one of these libraries is not present on the system, inclusion is not allowed and the following message is displayed:

```
Inclusion Denied: lib x not present!
                  <RET> to continue
```

   where x is the number of the absent library.

- The first two elements in the table, GLOBAL and PAGING, may not be excluded from the configuration. In fact, the following message is displayed if they are selected:

```
You can't Modify This Set
                  <RET> to continue
```

The following mask will be displayed:

```
---------------CONFIGURATION INFORMATION -------------
<Row Up>=UP <Row Down=DOWN p=Page <RET>=Select <Home=
MAIN MENU>

        GLOBAL         PRESENT        system parameters
        PAGING         PRESENT        paging parameters
        MESG           PRESENT        message code
        SHMEM          PRESENT        shared memory code
        SEMA           PRESENT        semaphore code
        TUNER          ABSENT         system tuner driver
        DCS            PRESENT        DCS driver inclusion
        DCE            ABSENT         DCE driver inclusion
------------------------------------------------Page 1----
```

Note that the above menu may be slightly different from the user's and should therefore be considered as an example.

1. Use the arrow keys, or the corresponding key sequence, to position the cursor on the element to be included or excluded from the configuration and press *<RET>*.

   One of the following two messages will be displayed: the first if an element is to be included, and second if an element is to be excluded.

   ```
   Do You Want To Include XXX (y/n)?
   Do You Want To Esclude XXX (y/n)?
   ```
   (XXX is the element selected).

2. To include or exclude XXX, enter *y* and press *<RET>*. Otherwise, enter *n* and press *<RET>*.

   In all cases of exclusion, the "Unix Configuration" mask is displayed. If ESD or RDC or TAC, is included, the following message is displayed:

   ```
   Do You Want To Modify XXX Parameters (y/n)?
   ```

If y the "Tunable Parameter" mask will be displayed and the parameters may be modified. To include other drivers, continue from the next step.

3. **On Which BOARD do you wish to install XXX driver? [0-7], <RET> to finish:**

    Enter the number corresponding to the LP0 board on which XXX is to be installed, and press *<RET>*. XXX may be installed on more than one LP0 board; in such a case, the numbers should be entered one after the other (e.g., 23...).
    Go to step 4. If the user simply presses *<RET>*, the following message is displayed:

    Driver Won't Be Installed
    Do You Confirm Your Choice [y/n]?

    To confirm that the operation is to be cancelled, enter y and press *<RET>*; the initial selection screen appears. Otherwise, enter n and press *<RET>*; the message displayed in Step 3 is redisplayed.

4. **XXX Driver Be Installed on:**
    Line processor Board #N...
    . . . .
    . . . .

    where N is the number of the board entered in Step 3. A message of this type is displayed for each board number entered.

    Do you Confirm your Choice [y/n]?

    To confirm the installation of XXX on the board indicated in the message, enter y and press *<RET>*. The procedure is completed successfully and the initial selection screen is redisplayed. Regenerate and install the kernel using option 3, "Install Unix Kernel". Otherwise, enter n and press *<RET>*; the message displayed in Step 3 is redisplayed.

UPDATING TUNABLE PARAMETERS

UPDATING TUNABLE PARAMETERS allows the user to alter the parameters of the groups indicated in the following table that is displayed:

```
------------------- TUNABLE GROUPS -------------------
<Row Up>=UP <Row Down>=DOWN p=Page <RET>=SELECT
<Home>= MAIN MENU

     GLOBAL          system parameters
     PAGING          paging parameters
     MESG            message code
     SHMEM           shared memory code
     SEMA            semaphore code
     DCS             DCS driver inclusion
     DCE             DCE driver inclusion
     ESD             ESDI driver inclusion

------------------------------------------- Page 1 --------
```

This table remains on the screen until the operations in "Updating Tunable Parameters" have been completed and it is automatically updated each time an alteration is made.

Use the arrow keys, or the corresponding key sequence, to position the cursor on the relevant group of parameters and press <RET>; the list of group parameters will be displayed.

Position the cursor on the desired parameter and press <RET>. Respond to the prompt (#) by entering the new value for the parameter and press <RET>. The initial selection screen will be displayed.

NOTES

- Some parameters have clearly defined relationships with other parameters (e.g., X must always be greater than Y; Z must be a multiple of A, etc.). Changing one of the parameters thus involves changing the parameter to which it is related. For this reason, when one of these parameters is selected, a message is displayed indicating the parameter to which it is related and the type of relationship involved. This situation regards the parameters of the PAGING group, GETPGSLOW and GETPGSHI.

  The GETPGSLOW parameter is linked to GETPGSHI by the following formula: GETPGSLOW < GETPGSHI. When GETPGSLOW is selected, the following message is displayed:

  ```
  Warning: GETPGSLOW MUST BE < GETPGSHI
      <RET> to continue
  ```

  Therefore, after changing the value of GETPGSLOW, make the alteration to GETPGSHI according to the above formula.

- There are predetermined limits on the value that each parameter may assume. For this reason, when a parameter from any of the groups is selected, a message is displayed indicating the parameter and the limits to which its value must conform.

Example1

The value of NHBUF must be a power of 2. After selecting NHBUF, the following message is displayed:

```
NHBUF power of [2] New Value -->
```

Enter the new value, respecting the limit indicated.

Example2

NPROC must have a value of between [40 1000]. After selecting
NPROC, the following message is displayed:

NPROC [40..1000] New Value -->

Enter the new value, respecting the limit indicated.

If the new value entered for the parameter in question does not conform to
the limit indicated, one of the following error messages is displayed:

```
ERROR: Input Out of Range
ERROR: Input Must Be Power Of [..]
ERROR: Input Must Be Lower Than [..]
ERROR: Input Must Be heighter Than [..]
ERROR: Input Must Be Integer Unsigned Or (nn)K
```

Each of these messages is followed by:

<RET> to continue

Press *<RET>*. The message which preceded the error message will be
redisplayed.

INSTALL UNIX KERNEL

This operation must be performed every time that either the system configuration or a tunable parameter are altered. "Configuration Definition" and "Updating Tunable Parameters" allow the user to select elements to be included or excluded from the configuration, and to update certain parameters. "Install Unix Kernel" generates a new /unix containing the alterations that have been made and installs it in place of the previous kernel. It also creates a new configuration table, that is then saved in the /usr/CONF/cpu/cf/conf.c file. The old kernel is saved in a file whose pathname is displayed on the screen at the end of the saving procedure.

The following messages will be displayed:

```
saving the current unix...
/unix is saved as /usr/CONF/unix(current date)
New environment is being generated
     WAIT .....
New environment has been installed
It will be active from the next initialization
```

When the shell prompt is displayed, shut down the system and reinitialize: only now does the kernel with new modifications become active.

If problems occur that prevent the new kernel from being installed, the following message is displayed:

```
Something went wrong
New environment generation has been interrupted.
```

The installation procedure is interrupted and the previous kernel restored.

HOW TO CREATE NODES TO SUPPORT DISKETTE UNITS

At the beginning, the nodes which support the diskette driver, whether in block and in raw mode, are already present in the system. However, it is necessary to create the nodes to support the diskette high density.

The following command is given to create these nodes should there be the need:

```
# mknod /dev/name <x> <major> <minor>
```

where:

name	is the diskette identifier and must be composed as follows:
	fdsk0 for block mode. **rfdsk0** for raw mode.
	The above names may be followed by the suffix q to indicate high density (96 tpi).
	Default value is 96 tpi.
<x>	can be c, which means that the disk is used in raw mode, or b, which means that the disk is used in block mode.
<major>	is the major number which identifies the device class. Choose the value using the following table:

	Raw Mode	Block Mode
Floppy DCE	16	4
Floppy DCS	8	0

<minor>   is the minor number and uniquely defines a device. Its value may be one of the following:

	double density	high density
Floppy DCE	1	2
Floppy DCS	24	

Once the node has been created, the corresponding driver (DCS or DCE) must be installed in the kernel. To do this, use the *config* procedure. (See "Config" in this Section). Shut down the system and reinitialize.

HOW TO CREATE NODES TO SUPPORT STREAMER UNITS

At the beginning, the node which supports the streamer driver is already present in the system.

The following command is given to create this node should there be the need:

 # mknod /dev/tape00 c \<major\> \<minor\>

where:

tape00   is the streamer identifier.

c   means that the streamer is to be used in raw mode.

\<major\>   is the major number which identifies the device class. Choose the value using the following table:

Streamer DCS interrupt   20
Streamer DCE   14

\<minor\>   is the minor number and uniquely defines a device. Its value may be one of the following:

Streamer DCS interrupt   0
Streamer DCE   32

Once the node has been created, the corresponding driver (DCS or DCE) must be installed in the kernel. To do this, use the *config* procedure. (see "Config" in this Section"). Shut down the system and reinitialize.

HOW TO CREATE NODES TO SUPPORT DISK UNITS

To create the nodes which support all the partitions that can be created in each disk unit, verify that these nodes does not already exist in the /dev directory and then execute the following command:

        # mknod /dev/name <x> <major> <minor>

where:

name   is the disk identifier and must be composed as follows:

                     Fixed Disk Unit:
                     dsk is the mandatory prefix block mode.
                     rdsk is the mandatory prefix for raw mode.

                     Removable Disk Unit:
                     smd is the mandatory prefix block mode.
                     rsmd is the mandatory prefix for raw mode.

                     The above prefixes are followed by the "device number"
                     (n) and the "slice number" (m). For example, dsknm,
                     smdnm.

                     The "device number" (n) depends on the controller to
                     which the disk unit is connected, as indicated in the table
                     below:

                     1° **Disk Controller**   Fixed Disk Unit: 0, 1, 2 (D01, D02,
                                              D03).
                                              Removable Disk Unit: 0, 1.

                     2° **Disk Controller**   ESDI Fixed Disk Unit: 4, 5, 6 (D01,
                                              D02, D03).
                                              Removable Disk Unit: 2, 3.

The "slice number" (m) must be an integer in the range 0 thru 7 (7 for raw mode only).

<x>   can be c, which means that the disk is used in raw mode, or b, which means that the disk is used in block mode.

<major>   is the major number which identifies the device class. Choose the value using the following table:

	Raw Mode	Block Mode
Disk ESDI (Wren3, Maxtor)	12	2
Disk SMD (removable)	10	1
ST506 Disk (Wren2)	8	0

<minor>   is the minor number and uniquely defines a device. It is calculated as:

64*c + 8*N + m

where:

c is the controller number (0 for the central unit, 1 for the expansion unit)

N is the device number relative to the hardware personalization. It is calculed according to the position of the device inside the single cabinet:

name	N
dsk0m	0
dsk1m	1
dsk2m	2
dsk4m	0
dsk5m	1
dsk6m	2

m is the slice number (0:7)

Once the node has been created, the corresponding driver (DCS, DCE, ESD or RDC) must be installed in the kernel. To do this, use the *config* procedure. (see "Config" in this Section"). Shut down the system and reinitialize.

If the controller to which the disks are connected is personalized as the second controller, it will be necessary, as well, to define two controllers on the level of the software with the config command. If the utilized controller is already present in the "CONFIGURATION MASK" it will be necessary to exclude the same driver and then include it by responding with "2" to the question relative to the controller number present in the system.

HOW TO CREATE NODES TO SUPPORT EXTERNAL TAPE UNITS

The system initially supports the first external tape unit connected to the system. The */dev* directory contains the node for the first tape unit, called *rmtu0* (low density), or *rmtu0h* (high density) both of which are only for character mode. When an additional tape unit is connected to the system, its node must be created in the */dev* directory, so that the software recognizes the new unit.

To create the node for a new tape unit, enter the following command:

```
# mknod /dev/name c <major> <minor>
```

where:

    name   is the tape identifier and must be composed of the prefix rmtu followed by the "device number" and, optionally, the letter h which means high density.

                      The "device number" is 0 for the first tape unit, 1 for the second tape unit, etc.

    c   means that the tape is to be used in raw mode.

    <major>   is the major number and is equal to 18.

<minor>   is the minor number and uniquely defines a device.
           Choose the value using the following table:

density	name	<minor>
1600	rmtu0	24
1600	rmtu1	25
1600	rmtu2	26
1600	rmtu3	27
6250	rmtu0h	56
6250	rmtu1h	57
6250	rmtu2h	58
6250	rmtu3h	59

Once the node has been created, the corresponding driver (TAC) must be installed in the kernel. To do this, use the *config* procedure. (see "Config" in this Section). Shut down the system and reinitialize.

HOW TO CREATE NODES TO USE NON-NATIVE DISKETTES

To use the *iXS/iNAT* and *ibmread/ibmwrite* commands, the user must create four nodes in the */dev* directory, running the *mknod* command twice, once for raw mode and once for format mode.

To create each node, a command with the following syntax must be entered:

```
# mknod /dev/name x <major> <minor>
```

where:

name	must be one of the following:

                                  fdibm for raw mode
                                  fdibmhd for raw mode/high density
                                  ifdsk0 for format mode
                                  ifdskQ for format mode/high density.

x   can be c, which means that the diskette is used in raw mode, or b, which means that the diskette is used in format mode.

<major>   is the major number which identifies the device class. Choose the value using the following table:

	Raw Mode	Format Mode
Floppy DCI	16	15
Floppy DCI/High Density	16	15
Floppy DCS	8	9

<minor>   is the minor number and uniquely defines your device. Its
               value may be one of the following:

Floppy DCE   1

Floppy DCE/High Density   2

Floppy DCS   24

Once the node has been created, the corresponding driver (DCS or DCE)
must be installed in the kernel. To do this, use the *config* procedure. (See
"Config" in this Section). Shut down the system and reinitialize.

HOW TO CREATE NODES TO SUPPORT MORE THAN ONE PRINTER IN PARALLEL

The system initially supports a system printer connected to the first communication board on the system (*/dev/lp*). To connect another printer to a communication board, the relative printer node must be created, enabling the software to recognize the new printer. To create the node, a command with the following syntax must be entered:

    # mknod /dev/name c 19 <minor>

where:

name   represents the printer identifier (lp1, lp2, etc.)

19   is the major number, which remains constant

<minor>   is the minor number and depends on the board to which the printer is connected, as indicated in the table below:

Central Unit

```
SPX 0 or LPX 0        minor  =   0
SPX 1 or LPX 1        minor  =   16
SPX 2 or LPX 2        minor  =   32
SPX 3 or LPX 3        minor  =   48
SP1/SP2 8             minor  =   128
SP1/SP2 9             minor  =   144
```

Expansion Unit

```
SPX 4 or LPX 4        minor  =   64
SPX 5 or LPX 5        minor  =   80
SPX 6 or LPX 6        minor  =   96
SPX 7 or LPX 7        minor  =   112
SP1/SP2 a             minor  =   160
SP1/SP2 b             minor  =   176
```

When the prompt (#) is displayed, the system can support the printer.

SYSTEM CONFIGURATION TO SUPPORT THE EMERGENCY BATTERY (UPS)

Description

Once the emergency battery has been installed, the system must be set up to support it at software level.

The battery is automatically activated if there is a drop in voltage while the system is powered on. Power is temporarily supplied to the system and each user is allocated a period of time in which to log off before the shutdown is enforced.

The battery time-out, that is, the maximum time period that precedes the enforced shutdown of the system, must be defined by the System Administrator in the /etc/inittab file. The System Administrator is also responsible for checking that the battery has sufficient power to support the entire system after a drop in voltage.

WARNING

The battery guarantees the physical integrity of the files: if a drop in voltage occurs, no file will be lost. The logical integrity of the files in use at the time of the drop in voltage cannot be checked; it is the responsability of the System Administrator to check on the outcome of the operation in progress when the drop in voltage occurred.

Defining the Time-out for the Emergency Battery

The time-out period for the emergency battery is specified in /etc/inittab. Access the file and locate the following instruction:

```
pf:powerfail: /etc/powerfail -ts 1>/dev/console 2 >&1
```

The "s" value represents the battery time-out period in minutes and must be initialized. To improve the efficiency of the battery, it is recommended that 1/3 of the maximum power be used at a time. Thus, even if the battery has a maximum operation time of 10 minutes, and s can vary from 0 to 9, it is advisable to assign to s a value of 3 or less.

The upsstat Command

With this command, the user can check the battery level. Having installed the battery, upsstat must be initialized; that is, the *Max charge, Current charge* and *Recharging time* parameters must be set. These parameters are subsequently manipulated and updated automatically by the system.

If the upsstat command is entered for the first time, the following message is displayed:

```
Please to initialize giving all the parameters
values
usage: upsstat [-c<current seconds of charge>]
               [-m<max seconds of charge>]
               [-r<seconds of charge gained in one
               hour of recharging>]
```

Initialize the parameters as follows:

```
# upsstat -cxx -myy -rzz
```

where:

xx represents the maximum operation time of the battery in seconds.

yy is the number of seconds of battery power still available. Initially, yy will have the same value as xx.

zz is the number of seconds of power that the battery can gain in one hour while the system is powered off.

For information on the current state of the battery, enter:

```
# upsstat
```

A table is displayed, containing all relevant information. For example, if the battery is at maximum power, the table will be as follows:

```
Max charge          =   xx
Current charge      =   yy
Recharge val.       =   zz
Recharging time     =   0 hours 0 minutes
```

Recharging time constitutes the time that the system must be powered off in order to completely recharge the battery. This parameter is calculated automatically by the system.

Each time the battery is used, the table is automatically updated. If the operational time still available is less than 1/3 of the maximum time, the following message is displayed at the end of the table:

```
WARNING          U.P.S. battery charge is too low !!
It needs X hours xx minutes of recharging, to
reach the full charge
```

Shut down the system. Do not power the system up until the time specified in the message has elapsed.

Using the Battery

Once the time-out period has been indicated in */etc/inittab*, and the *upsstat* command has been initialized, the battery is set up for use.

If a voltage drop occurs, the system warns all active processes and the console operator that the "Power Fail" procedure has been launched. To do this, send the *SIGPWR* (19) signal to each active process (the process can receive and interpret this signal). The following message is displayed on the console:

POWER FAIL PROGRAM

The following message is displayed on the screen of all users who are currently logged in:

PLEASE LOG OFF NOW ! ! !
All process will be killed in XXX seconds.

If the user does not log off, the message reappears every 30 seconds. When each user has logged off, or alternatively, when the time-out period has elapsed, the "power fail" procedure continue and the system shutdown is enforced: the following message appears:

SYSTEM BEING BROUGHT DOWN NOW !!!

The following messages are displayed on the console:

Busy out (push down) the appropriate
phone line for this system.

System services are now being stopped.

All currently running processes will now be
killed.

System is down.

The system is now shut down. If the battery operation level is less than 1/3 of the total level, before the "System is down" message, the following message is displayed:

WARNING: U.P.S. battery charge is too low !!
It needs XX hours xx minutes of recharging, to
reach the full charge

When the voltage is restored, the battery automatically reinitializes the system and executes the operations indicated by the user in the /etc/restart file, under "UPS reinitialization". Likewise, if the charge remaining is less than the minimum charge limit, the above *WARNING* message is displayed.

It is recommended that the system be shut down and powered off for sufficient time to enable the battery to be completely recharged. When the battery is once more at the maximum level, update the upsstat command table, restoring the *Max charge* parameter to the maximum value, as follows:

```
# upsstat -cxx              Press <RET>
```

where *xx* represents the maximum operation time of the battery in seconds.

Section VI

SOFTWARE MAINTENANCE PROCEDURES

BACKUP COMMAND

Description

This command is used primarily to save files to diskette and restore them later to disk.

There are two ancillary utilities included. The first displays listing of the files on the diskette, the second is used to format a diskette.

During execution of in this procedure, the temporary files are placed, by default, in the */usr/tmp* directory. However, the files may be sent to the */tmp* directory. In order to do this, find the *BACKTMP* variable in *.login* or *.profile* and set it to */tmp*.

Use

To call the backup procedure, enter the following command:

```
# backup
```

The main menu will be displayed on the screen:

```
----- FILE SYSTEM MAINTENANCE -----

        1-   Incremental save
        2-   Selective save
        3-   Total restore
        4-   Selective restore
        5-   Backup listing
        6-   Diskette Device Choice
        7-   Diskette Format
        8-   Exit

    Type number:
```

Enter a number in the range 1 thru 7 according to the operation to be executed. To leave the procedure enter 8. Go to the relevant subsection.

NOTE

During the phase of saving files to diskette, the files may be split into several smaller parts. To see this, examine the index of the saved files. These files will be rebuilt automatically during the restore to disk phase.

INCREMENTAL SAVE

This operation saves all the files of the system disk modified within a preceding number of days. The user may specify the number of days. If there are 512 Kbytes of memory available, it is possible to save as many as 1800 files.

A list of the disks and partitions that have been mounted is displayed as in the following example:

```
-----------------INCREAMENTAL SAVE----------------

k=UP  j=DOWN  <return>=SELECT  <space>=PAGE  <esc>=EXIT

        Partition        Directory
    ->  dsk00            /
        dsk01            /tmp
        dsk02            /usr


-------------------------------------------------------
```

1. Select the partition with the files to be saved.

    The following messages will be displayed in the same order as below:

    ```
    insert backup period (number of days):
    ```

2. Enter the number of days, counting back from the current day, for which the modified files have to be saved.

    ```
    Partition: dskxx  Directory: dir_pathname
    WAIT
    you need n diskettes to do the backup
    do you want to continue ? (y/n)
    ```

3. Reply *n* if you wish to terminate the procedure. Reply *y* to continue: the following message is displayed:

```
INSERT diskette1 AND TYPE <RETURN>
```

4. Insert the diskette requested in the unit and press **<RET>**.

5. Repeat Step 4. for the subsequent diskettes, if any, until the following message is displayed:

```
Save terminated
Type <RETURN> to continue
```

6. Press **<RET>**. The main menu will be redisplayed.

SELECTIVE SAVE

This operation saves selected files. The user either chooses the files one by one, or else specifies a file that contains the pathnames of the files to be saved.

1.   The following messages will be dispayed in the same order as below:

```
have you got a pathname file? (y/n)
```

1.a   Reply *y*, and there will be a request for the name of the file containing the pathnames of the files to be saved:

```
Enter file:
```

1.b   Reply *n*, and it will be necessary to enter the names of the files to be saved one at a time:

```
Insert pathnames (0 to end)
pathname:
```

Enter the first pathname and press *<RET>*. The prompt for the pathname will be displayed until you enter 0.

2.   The following message will be displayed:

```
you need n diskettes to do the backup
do you want to continue ? (y/n)
```

Reply *n* if you wish to terminate the procedure. Reply *y* to continue: the following message is displayed:

```
INSERT diskette n AND TYPE <RETURN>
```

where *n* is the sequence number of the diskette.

3.   Insert the diskette requested in the unit and press *<RET>*.

4. Continue until the following message is displayed:

```
Save terminated
Type <RETURN> to continue
```

5. Press **<RET>**. The main menu will be redisplayed.

TOTAL RESTORE

This operation restores to disk all the files previously saved to diskette.

The following message will be displayed:

```
INSERT diskette n AND TYPE <RETURN>
```

where *n* is the sequence number.

1. Insert the requested diskette in the unit and press *<RET>*.

2. Repeat Step 1. until the following message is displayed:

    ```
    Restore terminated
    Type <RET> to continue
    ```

3. Press *<RET>*. The main menu will be redisplayed.

NOTE

For files contained on more than one diskette. check whether the protection bits have been altered. If this is the case, restore the protection bits using the *chmod* and *chown* commands.

SELECTIVE RESTORE

This operation restores to disk files previously saved on diskette. The user can either select the files one by one, or else specify the name of a file containing the pathnames to be restored.

The following message will be displayed:

```
INSERT diskette 1 AND TYPE <Return>:
```

1. Insert the first diskette in the unit and press **<RET>**.

    The following message will be displayed after a while:

    ```
    have you got a pathname file? (y/n)
    ```

1.a Reply *y*, and there will be a request for the name of the file containing the pathnames of the files to be restored:

    ```
    Enter file:
    ```

1.b Reply *n*, and the files which may be restored to disk will be displayed on the screen as in the following example:

    ```
    -----------------SELECTIVE RESTORE---------------

     k=UP  j=DOWN <return>=SELECT <space>=PAGE <esc>=EXIT

        DISKETTE1 ->
        /tmp/backuplist
        /usr/doc/aa
        /usr/doc/bb
        ...
    --------------------------------------------------------
    ```

2. Select the files one at a time by positioning the cursor on the pathname and pressing **<RET>**. After selecting all the files, press **<esc>**.

The following message will be displayed:

```
INSERT diskette 1 AND TYPE <Return>:
```

3. The diskette has been already inserted in the unit. therefore press *<RET>*.

4. The following message will be displayed:

```
INSERT diskette n AND TYPE <Return>
```

where *n* is the sequence number.

5. Insert diskette *n* in the unit and press *<RET>*. Repeat Step 4 until the following message is displayed:

```
Restore terminated...
Type <Return> to continue
```

6. Press *<RET>*. The main menu will be redisplayed.

NOTE

For files contained on more than one diskette, check whether the protection bits have been altered. If this is the case, restore the protection bits with the *chmod* and *chown* commands.

BACKUP LISTING

This operation is used to view the index of files saved to diskette.

The following message will be displayed:

```
INSERT diskette 1 AND TYPE <Return>:
```

1. Insert the first diskette obtained from the save procedure and press
   <RET>. The index is loaded to disk will be displayed as in the following
   example:

```
-----------------BACKUP LISTING-----------------

<space>=PAGE <esc>=EXIT    Mon Feb 1 10:56:10   1988

                DISKETTE
                /tmp/backuplist
                /usr/doc/aa
                /usr/doc/bb
                ...
-------------------------------------------------------
```

At the end, the following message will be displayed, and the main menu
will then be redisplayed.

```
----------------BACKUP LISTING TERMINATED--------
```

DISKETTE DEVICE CHOICE

With this option the user may choose to use a high density diskette device or revert to double density diskette device, after a previous high density selection.

The following message will be displayed:

```
Enter diskette device name:
```

1. Enter the name of the node for the device (e.g. */dev/fdsk0q* for high density). To select double density simply press *<RET>*.

2. Select from the main menu the operation to be performed.

DISKETTE FORMAT

See "Diskinit: Procedure to Format a Disk or to Update Slice Sizes" later in this section.

When the formatting procedure has finished, the following message will be displayed:

```
Hit <return> to continue
```

Press *<RET>*. The main menu will be redisplayed.

SAVREST: SAVE AND RESTORE A DISK SLICE

WARNING

If the tape being used is a streamer, then it must
be connected to a DCE controller. If it is
connected to a DCS controller instead, see
"Streamer Unit: Save and Restore a Disk" later
in this section.

Description

Savrest may be used by a super-user to save a disk slice to tape or to
restore a previously saved disk slice from tape back to a disk. The output of the
save may be multivolume.

A tape may only be restored to a disk of the same type as that of the
original disk that was saved.

NOTES:

- This command can be performed either by initializing the system from
  disk or from diskette. (See Section IV "System Initialization and
  Shutdown procedures").

- *tape* may either be a streamer cartridge or a tape reel.

- Before copying the contents of a slice, the *umount* command must be run
  on that slice, with the exception of slice 7.

- Since Slice 7 is not mountable, none of *mount*, *umount* and *fsck*
  commands should be used on it.

- If *QUIT* is selected from any mask, the procedure is terminated and the prompt is displayed.

- The use of the <BREAK> key is not effective during the *save/restore* execution phase.

Use

The command must be entered as follows:

 # savrest

The following mask will be displayed:

```
          S A V E  -  R E S T O R E

      1 -  S A V E           (Disk --> Tape)
      2 -  R E S T O R E     (Tape --> Disk)
      3 -  Q U I T


Please enter your choice ->
```

Enter:

1   to save a disk slice. Press *<RET>*.
2   to restore a previously saved disk slice. Press *<RET>*.
3   to quit. Press *<RET>*.

SAVE

1. The following mask is displayed:

```
        DISK TYPE

    1 -  WREN2 (ST506)
    2 -  WREN3 (ESDI)
    3 -  MAXTOR (ESDI)
    4 -  SMD
    5 -  QUIT


Option Selected  ->
```

2. Select the disk type in the range 1 thru 4 and press <*RET*>. The following message will be displayed:

    ```
    Disk Number [0 - n]  ->
    ```

    where n is 7 for ESDI disks, 5 for ST506 disks and 3 for SMD.

    Enter the device number according to the position of the drive on the controller and press <*RET*>.

3. The following message will be displayed:

    ```
    Slice Number [0 - 7]  ->
    ```

    Enter the number of slice you want to save and press <*RET*>. If you want to save the entire contents of a disk, enter 7.

The following mask will be displayed:

```
          TAPE TYPE

     1  -   DCE
     2  -   TAC (772)
     3  -   QUIT

   Option Selected ->
```

4.   Enter the number corresponding to the tape controller and press *<RET>*.

4.1   If TAC is selected, the following message will be displayed:

```
   High density ('y' or 'n')
```

If you have a high density tape, reply *y*, otherwise reply *n*.

5.   When the save begins, the following message is displayed:

```
   SAVE PROCEDURE IN EXECUTION, PLEASE WAIT...
```

6.   In case of multivolume save, the following message will be displayed for each tape required by the procedure:

```
   If you want to go on, mount a new tape and
   press  <return>
```

Mount the next tape and press *<RET>*.

7.   When the save is terminated, the following message is displayed:

```
   n blocks saved
```

Where **n** is the number of saved blocks.

After the *save* has been executed, the prompt is displayed. If *umount* was used before the save, run the *mount* command.

RESTORE

1. The following mask will be displayed:

    ```
            DISK TYPE

        1 -  WREN2 (ST506)
        2 -  WREN3 (ESDI)
        3 -  MAXTOR (ESDI)
        4 -  SMD
        5 -  QUIT

    Option Selected  ->
    ```

2. Select the disk type in the range 1 thru 4 and press <RET>. The following message will be displayed:

    ```
        Disk Number [0 - n]  ->
    ```

    where n is 7 for ESDI disks, 5 for ST506 disks and 3 for SMD.

    Enter the device number according to the position of the drive on the controller and press <RET>.

3. The following message will be displayed:

    ```
        Slice Number [0 - 7]  ->
    ```

    Enter the number of slice in which you want to restore the saved tape and press <RET>. If you want to restore the entire contents of a previously saved disk, enter 7.

The following mask will be displayed:

```
                TAPE TYPE

        1  -   DCE
        2  -   TAC (772)
        3  -   QUIT

    Option Selected ->
```

4. Enter the number corresponding to the tape controller and press <RET>.

4.1 If TAC is selected, the following message will be displayed:

```
    High density ('y' or 'n')
```

If you have a quad density tape, reply *y*, otherwise reply *n*.

5. When the restore begins, the following message is displayed:

```
    RESTORE PROCEDURE IN EXECUTION, PLEASE WAIT...
```

6. In case of previous multivolume save, the following message will be displayed for each tape required by the procedure:

```
    If you want to go on, mount a new tape and
    press  <return>
```

7. When the restore is terminated, the following message is displayed:

```
    n blocks restored
```

where **n** is the number of restored blocks.

HSAVE: SAVE FROM DISK TO DISKETTE

WARNING

This command may only be used with Wren2
disks with ST506 interface.

Description

This procedure is used to copy one or more slices from a disk to a set of diskettes.

This operation may be repeated periodically, whenever the contents of the disk are changed, or at the end of the day. A save could also be executed weekly or monthly. To decide what is best, ask the System Administrator.

It is recommended that the user execute the save operation. by using alternately two sets of diskettes, in order to have a recent version of any updated data.

Use the option -s to determine the number of diskettes needed to save a slice or the whole disk. In this way, the number of diskettes required for the save may be known, slice by slice.

NOTE

In this subsection, D indicates the number
corresponding to the disk to be saved; X
indicates the number of diskettes required to
save a specific slice.

Use

Initialize the system from disk. To determine the number of diskettes to format for the save, enter the following command:

```
# hsave -s
```

The following message will be displayed:

```
SAVE V.0.0 1986
which disk do you want to save (0-5)?> <
```

1. Enter the number, *D*, corresponding to the disk to be saved: See Table B in Appendix A. Press *<RET>*.

    The following message will be displayed:

    ```
    Do you want to save slice /dev/dskD0 (y/n)?
    ```

2. If you want to save slice 0 enter *y* and press *<RET>*. Otherwise enter *n* and press *<RET>*.

    ```
    X Diskette Needed for /dev/dskD0

    Do you want to save slice /dev/dskD1 (y/n)?
    ```

    Enter *y* if you want to save slice 1. Continue from Step 2 until the last slice. At the end, the following message will be displayed.:

    ```
    END
    ```

    The total number of diskettes required to perform either a partial or total save of the disk, is obtained by summing the numbers of diskettes required for each slice.

SAVE PROCEDURE

Format the required number of diskettes. (See "Diskinit" in this section). Then enter the following command:

 # hsave   Press *<RET>*

The following message will be displayed:

```
SAVE V.0.0 1986
which disk do you want to save (0-5)?> <
```

1. Enter the number, *D*, corresponding to the disk to be saved: See Table B in Appendix A. Press *<RET>*.

    The following message will be displayed:

    ```
    Do you want to save slice /dev/dskD0 (y/n)?
    ```

    If you want to save slice 0 enter *y*. Otherwise enter *n* and go to Step 3.

    ```
    Saving /dev/dskD0: N formatted Diskettes
    needed

    Insert a formatted diskette, done (y/n)?
    ```

2. Insert a formatted diskette, enter *y* and press *<RET>*. The following message will be displayed:

    ```
    Insert a formatted diskette, done (y/n):
    ```

    Replace the diskette which has just been written with a new one. Enter *y* and press *<RET>*.

    Continue until the whole slice 0 has been saved.

3. When this procedure is completed, a message is displayed requesting the user to specify whether the next slice is to be saved:

```
Do you want to save slice /dev/dskD1 (y/n)
```

Perform Step 2 for each slice of the disk to be saved.

At the end, the following message is displayed:

```
- End of save -
```

HRESTORE: RESTORING A DISK FROM DISKETTE

WARNING

This command may only be used with Wren2
disks with ST506 interface.

Description

This operation is used to copy to a Wren2 ST506 disk the contents of one
or more slices of a disk previously saved on a set of diskettes.

The diskettes must be inserted in the same order in which they were
previously inserted during the save procedure.

Use

NOTE

In this subsection, D indicates the number
corresponding to the disk to be restored; P
indicates the number of the slice of the disk that
must be restored.

1. Initialize the system from diskette (See "Initialization from Diskette" in
    Section IV) and format the disk.

    Enter the following command:

    ```
    # hrestore              Press <RET>
    ```

    The following message will be displayed:

    ```
    Remove the bootstrap diskette and insert
    ```

```
backup diskette,done? (y/n):
```

2. Remove the COMMANDS diskette from the drive. Insert the first diskette obtained from the save procedure. Enter *y* and press *<RET>*.

The number, *D*, corresponding to the disk that must be restored, is displayed followed by the number, *P*, of the slice of the disk that must be restored:

```
Restoring disk /dev/dskD

Restoring slice /dev/diskDP

Insert next backup diskette,done? (y/n,0=end)
```

3. Replace the diskette with the next one obtained from the save procedure. Enter *y* and press *<RET>*. Go on until the diskettes are finished. At the beginning of the restore procedure of each slice, the messages indicating the disk and the selected slice are displayed:

```
Restoring slice /dev/diskDP

Insert next backup diskette,done? (y/n,0=end):
```

4. Insert the diskette and press *<RET>*. At the end, in response to the message:

```
Insert next backup diskette,done? (y/n,0=end):
```

5. Enter 0 and press *<RET>*.

```
Insert bootstrap diskette,done? (y/n):
```

6. Remove the last diskette used in the save procedure from the diskette unit. Insert the COMMANDS diskette. Enter *y* and press *<RET>*. The following message will be displayed to indicate the end of the restore procedure:

```
End of Restore
```

SELSAVE COMMAND

Description

The *selsave* command is used for saving one or more selected files. During execution of the operations in this procedure, the temporary files are placed, by default, in the *usr/tmp* directory. The files may also be sent to the */tmp* directory. In order to do this, locate the *BACKTMP* variable in *.login* or *.profile* and set it to the value */tmp*.

Use

Insert a formatted diskette in the unit. The *selsave* command must be entered according to the following syntax:

```
# selsave [-vf] [pathname] [-d device] [file-list]
```

where:

-v	The procedure becomes interactive.
-f	To use this option, there must be a file containing a list of files. Enables all the files listed to be saved in the file specified.
pathname	If the **-f** option is specified, it is the pathname for the file containing the pathnames of the files to be saved. Otherwise, it is the pathname of the file to be saved.
-d device	May be used to define the name of the node for the diskette device, according to the density, high or double. Default is double density.
file-list	It is the list of the pathnames of the files to be saved.

The following message will be displayed:

```
WAIT PLEASE: operation is running
```

1. If the -*v* option has not been used, go to Step 2. Otherwise, the following messages will be displayed:

    ```
    Number of file selected:n
    ```

    ```
    You need x Diskettes to do the backup
    ```

    where   *n* is the number of files selected to be saved
             x is the number of diskettes nedeed to run the save.

    ```
    Do you want to continue? (y/n)
    ```

    Enter *y* to continue the save procedure, *n* to exit..

2. The following message will be displayed:

    ```
    INSERT diskette 1 AND TYPE <RETURN>
    ```

    Insert the first diskette in the unit and press *<RET>*. The following message will be displayed:

    ```
    WAIT PLEASE: operation is running
    ```

    When the operation is completed, the shell prompt is displayed.

NOTES:

selsave *   Enables all files in the current directory to be saved.

selsave *.c   Enables all files with the suffix .c in the current directory to be saved.

SELRESTORE COMMAND

Description

The *selrestore* command enables one or more of the files on the diskette to be restored to disk.

Use

A command with the following syntax must be entered:

```
# selrestore [-a] [-vf] [pathname] [-d device]
            [file-list]
```

where:

-a	Enables all the files on the diskette to be restored. No other parameter may be used with this option.
-v	The procedure becomes interactive.
-f	To use this option, there must be a file containing a list of files. Enables all the files listed to be restored in the file specified.
pathname	If the **-f** option is specified, it is the pathname for the file containing the pathnames of the files to be restored. Otherwise, it is the pathname of the file to be restored.
-d device	May be used to define the name of the node for the diskette device, according to the density, high or double. Default is double density.
file-list	It is the list of the pathnames of the files to be restored.

The following message will be displayed:

```
INSERT diskette 1 AND TYPE RETURN
```

Insert the first diskette with the files to be restored in the unit and press
<RET>.

When the operation is completed, the shell prompt is displayed.

DUPVOL: COPYING THE DISK CONTENTS TO DISK

Description

This procedure enables the entire contents of a disk to be copied to a second disk.

Use

1. Initialize the system from disk or from diskette (See Section IV "System Initialization and Shutdown procedures").

2. Format the disk on which the copy is to be performed.

3. Enter the following command:

   ```
   # dupvol
   ```

   The following message will be displayed:

   ```
   Enter the number of the source disk > <
   ```

4. Enter the number of the disk to be saved. (See Table B in Appendix A). Press **<RET>**. The following message will be displayed:

   ```
   Enter the number of the destination disk > <
   ```

5. Enter the number of the disk on which to save the contents of the disk specified above. (See Table B in Appendix A). Press **<RET>** The following message will be displayed:

   ```
   Do you confirm your request (y or n)?
   ```

5.a To cancel the copy request enter *n* and press **<RET>**. The system prompt will be displayed.

5.b   To confirm the disk-to-disk copy with the values previously entered, enter
      y and press **<RET>**. To cancel the copy request, enter *n* and press **<RET>**.

      The following messages will be displayed:

          ```
          Starting to copy disk number D into disk
          number  d ...

          End of copy
          ```

CONLOG: CONSOLE LOG

Description

Conlog allows a super-user to enable the logging of all the messages displayed on the system console. The log file may then be displayed or printed. Optionally, it is possible to request the log of the user messages or the kernel messages only.

This command may be run from any terminal. Therefore, when the logging is enabled, it is recommended to use not the console but some other terminal to run the view function.

When *conlog* is running, it is better to only use the console for system administration commands. There are two reasons for this:

- The logging file may grow so quickly that it runs out of space if the console is used as a normal terminal.

- User applications and other menu-driven procedures may contain control sequences that cause a bad display.

Use

The *conlog* command may be entered according to the following syntax:

```
conlog -e file [-u] [-s]
conlog -d
```

where:

conlog -e	enables the logging
conlog -d	disable the logging
file	is the pathname of the file to be used as log file
-u	logs the user messages only
-s	logs the kernel messages only

One way of using this command is to include it as a command line as described below:

- **conlog -e logfile** may be included in the *rc* file, so that the logging is enabled during system initialization.

- **conlog -d** may be included in the */etc/shutdown* file, so that the logging is disabled at system shutdown.

If the command is launched without parameters the following mask will be displayed:

```
CONLOG

    CONSOLE LOGGER FACILITY
        - Exit Program
        - Enable log
        - Disable log
        - View log file
        - Print log file
```

Select an option using the *vi* cursor movement keys. The menu is supposed to be self explanatory. The following is a brief description:

```
- Exit Program
```
The program is terminated and the prompt is redisplayed.

```
- Enable log
```
The following message will be displayed:

```
Log file [/etc/conlog.dir/logfile] =
```

Press *<RET>* to use the default file `logfile`. Otherwise enter the pathname of another file. If the file already exists, the following message will be displayed:

```
File already existing. Proceed (y/n)?
```

If you wish to overwrite the file, reply *y*.
The following message will be displayed:

```
<u> - User Messages only; <s> System Messages
only [default is both] =
```

Enter <u> to log only the user messages, <s> to log only the kernel messages. To log both, press **<RET>**.

```
- Disable log
```
Disable the logging facility.

```
- View log file
```
The following message is displayed:

```
Log file [/etc/conlog.dir/logfile] =
```

Press **<RET>** to use the default or enter the pathname of another file.

The system will prompt for a start and end time. These times define the period for which the contents of the log file are to be displayed. The default values are defined by the limits of the log file.

```
- Print log file
```
The following menu will be displayed:

```
CONSOLE LOGGER FACILITY

    PRINTING SELECTION
           - Complete print
           - Partial print


    - Complete print
```
The complete log file will be printed on the device specified by the user (default= */dev/lp*).

- Partial print

The system will prompt for a start and end time. These times define the period for which the contents of the log file are to be printed. The default values are defined by the limits of the log file.

The report will be printed on the device specified by the user (default=/dev/lp).

STL: CONNECTING A PRINTER IN SERIAL MODE

Description

The */etc/stl* command, with its support file */etc/printer_ser*, allows the user to set up a serial printer.

Use

1. Set the microswitches of the printer to initialize it for the procedure. See the relevant printer manual.

2. In the file *inittab*, find the entry that describes the line to be used, and alter the line as follows:

    ```
    xx:2:respawn:/etc/stl ttyxx tty seriale
    ```

    where:

    xx are respectively the numbers of the processor and the line to which the printer is connected.

3. Find the process number of the *getty* for the port to be used in serial mode, as follows:

    ```
    # ps -t ttyxx
    ```

    If the line to which the printer is connected has been set to "respawn", go to Step 4. If it is has been set to "off", go to Step 5.

4. The process number assigned to ttyxx is displayed:

    ```
    PID      TTY      TIME      COMMAND
    XX       xx       0:04      GETTY
    ```

This process must be killed; enter the following command:

```
# kill -9 XX
```

where XX is the PID of the process.

When the prompt (#) is displayed, the printer can be used in serial mode.

5. The following message will be displayed:

```
PID     TTY     TIME    COMMAND
#
```

because no process has been assigned to the printer. Enter the following command:

```
# init q
```

Two processes with the same name are generated, one of which is temporary (i.e., it is killed after 60 seconds have elapsed).

When the prompt (#) is displayed, the printer can be used in serial mode.

Example of how to connect a printer in serial mode on port tty11:

Entry in *inittab*:

```
11:2:respawn:/etc/stl tty11 tty_seriale
```

If the port has been set to "respawn":

```
# ps -tty11
```

```
PID     TTY     TIME    COMMAND
59      11      0:04    GETTY
```

```
# kill -9 59
```

If the port has been set to "off":

```
# ps -tty11

PID     TTY     TIME    COMMAND
#

# init q
```

DISKINIT: PROCEDURE TO FORMAT A DISK OR TO UPDATE SLICE SIZES

Description

Formatting is the preliminary phase in the preparation of a disk or a diskette. It consists of structuring the area in which the data will be stored. The Volume Table of Contents (VTOC) is a field of 128 bytes which contains the characteristics of the disk or diskette. The formatting operation erases any data present on the medium.

Diskinit must be used each time you wish to format a disk or change the sizes of its slices. Take note of the information provided by the manufacturer regarding the location of the bad blocks. This information can be found on the label supplied with the disk.

NOTES:

- This procedure can be performed either by initializing the system from disk or from diskette.

- Only a super user can perform the operations to read/write a VTOC. In fact, if anyone else attempts to perform any of these operations, the following message is displayed:

  `** YOU ARE ATTEMPTING TO WORK AS SUPER USER !! **`

  The prompt is redisplayed. Enter *super-user* mode and repeat the procedure from the beginning.

- Since the *root* device may not be formatted, if you attempt to do so the following message is displayed:

  `YOU ARE ATTEMPTING TO FORMAT THE ROOT DEVICE !!`
  `Hit <return> to continue.`

  Press *<RET>* and the main mask will be redisplayed.

Use

When the prompt (#) is displayed, enter the following command:

 # diskinit

The main menu will be redisplayed:

```
                D I S K I N I T

        1 -     F O R M A T
        2 -     R E A D    VTOC
        3 -     W R I T E    VTOC
        4 -     L I S T  BAD  SECTORS
        5 -     Q U I T


        Please Enter Your Choice ->
```

Enter:

1   to format a disk or diskette
2   to read the VTOC of a disk or diskette
3   to write to the VTOC of a disk or diskette
4   to read the bad block table on a disk.
5   to quit the procedure. (*)

Press **<RET>**, and go to the relevant subsection.

(*)   If the user selects QUIT from any mask, the *diskinit* procedure is terminated and the prompt is displayed.

FORMAT

The following menu will be displayed:

```
                 F  O  R  M  A  T

        1  -      FLOPPY  (DCS)
        2  -      RESERVED
        3  -      FLOPPY  (DCE)
        4  -      WREN2  (ST506)
        5  -      RESERVED
        6  -      RESERVED
        7  -      WREN3  (ESDI)
        8  -      MAXTOR  (ESDI)
        9  -      SMD
       10  -      QUIT


Option selected ->
```

Enter the number corresponding to the device to be formatted, and press
<RET>. Go to the relevant subsection.

Floppy (DCS)

1. Remove the write-protect tab and insert the diskette in the drive. The following messages will be displayed:

   ```
   DEVICE "FLOPPY (DCS)" WILL BE OVER-WRITTEN
   DURING FORMATTING
   PROCEED? (y[es], or n[o])
   ```

   To format the diskette reply <y>, press <RET> and go to Step 2.

   To leave the procedure reply *n* and press <RET>.
   The following messages will be displayed:

   ```
   **CANCELLED**
        Hit <return> to continue
   ```

   Press <RET>. The *diskinit* main menu will be displayed. Go back to the paragraph "Use" and choose an option.

2. While the formatting procedure is in progress, a series of numbers is displayed on the screen, indicating the cylinders and tracks that have been formatted.

   ```
   CYL.    TRK
   ...     ...
   ```

3. The following messages will then be displayed:

   ```
   FORMAT       **DONE**

   Boot device? (y[es], or n[o])
   ```

   If the diskette to be formatted is a bootstrap diskette, enter <y> and press <RET>. Otherwise enter <n> and press <RET>.

The diskette VTOC is then written:

```
WRITE VTOC ** DONE **
Hit <return> to continue
```

Press **<RET>**: the *diskinit* main menu will be redisplayed. Remove the diskette from the unit.

Floppy (DCE)

1. Remove the write-protect tab and insert the diskette in the drive. The following message will be displayed:

   ```
   High density (1.6Mb) ? (y or n) ->
   ```

2. Enter *y* if the density of the diskette is high (1mb +200 kb) or *n* if the density of the diskette is double (720 kb).

3. The following messages will be displayed:

   ```
   DEVICE "FLOPPY (DCE)" WILL BE OVER-WRITTEN
   DURING FORMATTING
   PROCEED? (y[es], or n[o])
   ```

   To format the diskette reply *y* and go to Step 4.

   To leave the procedure reply *n* and press *<RET>*. The following messages will be displayed:

   ```
   **CANCELLED**
        Hit <return> to continue
   ```

   Press *<RET>*. The *diskinit* main menu will be displayed. Go back to the paragraph "Use" and choose an option.

4. While the formatting procedure is in progress, a series of numbers is displayed on the screen, indicating the cylinders and tracks that have been formatted.

   ```
   CYL.    TRK
   ...     ...
   ```

5. The following messages will then be displayed:

   ```
   FORMAT        **DONE**

   Boot device? (y[es], or n[o])
   ```

If the diskette to be formatted is a bootstrap diskette, enter *y* and press *<RET>*. Otherwise enter *n* and press *<RET>*. The diskette VTOC is then written:

```
WRITE VTOC ** DONE **
Hit <return> to continue
```

Press *<RET>*: the *diskinit* main menu will be redisplayed. Remove the diskette from the unit.

Wren2 (ST506)

NOTE: The b.c.a.i. value is calculated as:

```
b.c.a.i. = sector number * (60+512)+27-1

If sector is 0, b.c.a.i. is forced to 27.
```

The following message will be displayed:

```
Disk Number [0-5] ->
```

1. Enter the device number according to the position of the drive on the controller (See "Table B" in "Appendix A") and press <RET>.

   If this is the first time that the disk is formatted, go to Step 2. Otherwise go to Step 3.

2. The following message will be displayed:

```
Do you want to insert bad map elements?
(y[es], or n[o])
```

   To create the map of bad sectors, enter y and press <RET>. The values to be entered can be found on the bad sector label on the disk. This label should be read row by row. The following prompts will be displayed:

```
Type < q > to stop

cylinder: 0/
track: 0/
b.c.a.i.: 0/
```

   Enter the number corresponding to each cylinder, track and b.c.a.i. (the value for b.c.a.i. must be between 27 and 9750) and press <q> to stop. Go to Step 4.

3. The following message will be displayed:

    ```
    Do you want to recover the existing bad map?
    (y[es], or n[o])
    ```

    If you reply *n* go to Step 2. If you reply *y*, the current bad map will be displayed together with the following message:

    ```
    Do you want to add bad map elements?
    (y[es], or n[o])
    ```

    To update the map of bad sectors enter *y* and press *<RET>*. The following prompts will be displayed:

    ```
    Type < q > to stop

    cylinder: 0/
    track: 0/
    b.c.a.i.: 0/
    ```

    Enter the number corresponding to each cylinder, track and b.c.a.i and press *<q>* to stop.

4. The following message will be displayed:

    ```
    Do you want to verify/correct the bad map?
    (y[es] or n[o])
    ```

    To check the bad sectors list enter *y* and press *<RET>*. Otherwise enter *n*, press *<RET>* and go to Step 5.

    The following message will be displayed:

    ```
    Type <q> to stop or <d> to delete an element
    ```

The cylinder, track and b.c.a.i. numbers that may be deleted are displayed sequentially. If the value is not altered, the message (no change) is displayed.

When <q> is entered the verify message is redisplayed. Go back to the beginning of this step.

5. The following message will be displayed:

```
DEVICE "WREN2 (ST506)" WILL BE OVER-WRITTEN
DURING FORMATTING
PROCEED?  (y[es], or n[o])
```

6. To format the disk reply y and go to Step 7.

   To leave the procedure reply n and press <RET>.
   The following messages will be displayed:

```
**CANCELLED**
     Hit <return> to continue
```

   Press <RET>. The diskinit main menu will be displayed. Go back to the paragraph "Use" and choose an option.

7. The list of cylinders, tracks and bad blocks on the disk scans up the screen:

```
CYL.     TRK.     BAD
...      ...      ...
```

   The following messages will then be displayed:

```
FORMAT   **DONE**
Boot device  (y[es], or n[o])
```

8. If the disk to be formatted is a bootstrap disk enter y and press <RET>, otherwise enter n and press <RET>.

    A table of the disk slices and the relevant cylinders is displayed followed by this message:

    ```
    Slices ok (y[es] n[o]) ?
    ```

9. If you wish to alter the number of cylinders relative to a slice enter n and press <RET>. Otherwise, enter y, press <RET> and go to Step 10.

    ```
    Slice 0 Start Cylinder: 0/
    ```

    Enter the new value and press <RET>, otherwise simply press <RET>. If the value has not been altered, the message (no change) is displayed.

    ```
    Number of Cylinders:
    ```

    Enter the new value and press <RET>, otherwise simply press <RET>. Continue until you reach the last slice.

10. The WRITE VTOC and LIST BAD SECTORS functions, will then be performed.

Wren3 (ESDI) - Maxtor (ESDI) - SMD

1. The following message will be displayed:

    ```
    Disk Number [0-X] ->
    ```

    Where **x** is 7 for ESDI and 3 for SMD disks. Enter the device number according to the position of the drive on the controller (See Table B in Appendix A) and press *<RET>*.

    If this is the first time that the disk is to be formatted, the vendor map is displayed. Go to Step 2.

    The following message will be displayed:

    ```
    Do you want to recover the existing bad map?
    (y[es], or n[o])
    ```

    If you reply *n*, the vendor map is displayed. If you reply *y*, the current bad map is displayed.

2. The following message will be displayed:

    ```
    Do you want to add bad map elements?
    (y[es],or n[o])
    ```

    To update the map of bad sectors, enter *y* and press *<RET>*. The following prompts will be displayed:

    ```
    Type < q > to stop

    cylinder: 0/
    track: 0/
    ```

    Enter the number corresponding to each cylinder and track and press *<q>* to stop.

3. The following message will be displayed:

```
Do you want to verify/correct the bad map?
(y[es] or n[o])
```

To check the bad sectors list enter *y* and press *<RET>*. Otherwise enter *n*, press *<RET>* and go to Step 4.

The following message will be displayed:

```
Type <q> to stop or <d> to delete an element
```

The cylinder and track numbers that may be deleted will be displayed sequentially. If the value is not altered, the message **(no change)** is displayed.

When *<q>* is entered the verify message is redisplayed. Go back to the beginning of Step 3.

4. The following message will be displayed:

```
DEVICE xxxx WILL BE OVER-WRITTEN DURING
FORMATTING
PROCEED? (y[es], or n[o])
```

To format the disk reply *y* and go to Step 5.

To leave the procedure reply *n* and press *<RET>*.
The following messages will be displayed:

```
**CANCELLED**
    Hit <return> to continue
```

Press *<RET>*. The *diskinit* main menu will be displayed. Go back to the paragraph "Use" and choose an option.

5. The list of cylinders, tracks and bad blocks on the disk is displayed:

```
CYL.     TRK.     BAD
...      ...      ...
```

The following messages will then be displayed:

```
FORMAT      **DONE**

Boot device (y[es], or n[o]).
```

If the disk to be formatted is a bootstrap disk enter *y* and press *<RET>*. Otherwise enter *n* and press *<RET>*.

NOTE: If the disk to be formatted is an SMD, you must reply *n*, since SMD disks are not initializing disks.

6. A table of the disk slices and the relevant cylinders is displayed followed by this message:

```
Slices ok (y[es] n[o]) ?
```

If you wish to alter the number of cylinders relative to a slice, enter *n* and press *<RET>*. Otherwise enter *y*, press *<RET>* and go to Step 8.

7. The following prompts will be displayed:

```
Slice 0 Start Cylinder: 0/
```

Enter the new value and press *<RET>*, otherwise simply press *<RET>*. If the value has not been altered, the message **(no change)** is displayed.

```
Number of Cylinders:
```

Enter the new value and press *<RET>*. Otherwise simply press *<RET>*. Continue until you reach the last slice.

8. The WRITE VTOC and LIST BAD SECTORS operations will then be performed.

READ VTOC

The following menu is displayed:

```
        R E A D   VTOC

    1 -       FLOPPY (DCS)
    2 -       RESERVED
    3 -       FLOPPY (DCE)
    4 -       WREN2 (ST506)
    5 -       RESERVED
    6 -       RESERVED
    7 -       WREN3 (ESDI)
    8 -       MAXTOR (ESDI)
    9 -       SMD
   10 -       QUIT


Option selected ->
```

Enter the number corresponding to the device required. Go to the relevant subsection.

Floppy (DCS) (DCE)

1. Insert the diskette in the diskette unit. The following messages will be displayed:

   ```
   Description for Disk Floppy " Xxx Media"

   Total Number of Cylinders XX
   ```

   where Xxx is Boot if the diskette is a bootstrap diskette, and Work if it is simply a work diskette.

   ```
   READ VTOC ** DONE **

      Hit <return> to continue
   ```

2. Press <RET>. The main menu will be redisplayed.

Wren2 (ST506) - Maxtor (ESDI) - Wren3 (ESDI) - SMD

The following message will be displayed:

```
Disk Number [0-X] ->
```

Where **X** is **7** for ESDI disks, **5** for Wren2 ST506 disks and **3** for SMD disks.

1. Enter the device number according to the position of the drive on the controller. (See Table B in Appendix A). Press **<RET>**.

   The following messages will be displayed:

   ```
   READ VTOC    ** DONE **

   Hit <return> to continue
   ```

2. Press **<RET>**. The main menu will be redisplayed. .

WRITE VTOC

The following menu is displayed:

```
        W  R  I  T  E     VTOC

   1 -      FLOPPY (DCS)
   2 -      RESERVED
   3 -      FLOPPY (DCE)
   4 -      WREN2 (ST506)
   5 -      RESERVED
   6 -      RESERVED
   7 -      WREN3 (ESDI)
   8 -      MAXTOR (ESDI)
   9 -      SMD
  10 -      QUIT


Option selected ->
```

Enter the number corresponding to the device required. Go to the relevant subsection.

Floppy (DCS) (DCE)

The following message will be displayed:

```
Boot device? (y[es], or n[o])
```

1. If the diskette will be a bootstrap diskette, enter *y* and press *<RET>*. Otherwise, enter *n* and press *<RET>*.

    The following messages will be displayed:

    ```
    WRITE VTOC ** DONE **

    Hit <return> to continue
    ```

2. Press *<RET>*. The main menu will be redisplayed.

Wren2 (ST506) - Wren3 (ESDI) - Maxtor (ESDI) - SMD

The following message will be displayed:

```
Disk Number [0-X] ->
```

Where **x** is 7 for ESDI disks, 5 for Wren2 ST506 disks and 3 for SMD disks.

1. Enter the device number according to the position of the drive on the controller (See Table B in Appendix A) and press <*RET*>.

    The following message will be displayed:

    ```
    Boot device? (y[es], or n[o])
    ```

2. If the disk will be a bootstrap disk, enter *y* and press <*RET*>. Otherwise, enter *n* and press <*RET*>.

    NOTE: For SMD disks, enter *n* (these disks must not be bootstrap disks).

    The following messages will be displayed:

    ```
    Total Number of Cylinders:...
    ```

    Slice 0 Start Cylinder ...   Number of Cylinders ...
    Slice 1 Start Cylinder ...   Number of Cylinders ...
    Slice 2 Start Cylinder ...   Number of Cylinders ...
    Slice 3 Start Cylinder .   Number of Cylinders .
    Slice 4 Start Cylinder .   Number of Cylinders .
    Slice 5 Start Cylinder .   Number of Cylinders .
    Slice 6 Start Cylinder .   Number of Cylinders .
    Slice 7 Start Cylinder .   Number of Cylinders ...

    ```
    Slices Ok (y[es] or n[o])?
    ```

3. To alter the number of cylinders relative to a slice, enter *n* and press *<RET>*. Otherwise, enter *y*, press *<RET>* and go to Step 5.

```
Slice 0        Start Cylinder: 0/
```

4. Enter the new value and press *<RET>*, otherwise simply press *<RET>*. If the value has not been altered, the message (**no change**) appears.

```
Number of Cylinders:.../
```

Enter the new value and press *<RET>*, otherwise simply press *<RET>*.

Continue until you reach the last slice, SLICE 7.

5. The following messages will be displayed:

```
WRITE VTOC      ** DONE **
Hit <return> to continue
```

Press *<RET>*. The main menu will be displayed.

LIST BAD SECTORS

A menu similar to the following will be displayed:

```
        L I S T   BAD SECTORS

        1 - WREN2 (ST506)
        2 - WREN3 (ESDI)
        3 - MAXTOR (ESDI)
        4 - SMD
        5 - QUIT

Option selected ->
```

1. Enter the number corresponding to the disk required, and press <*RET*>.

   The following message will be displayed:

   ```
   Disk number [0-X] ->
   ```

   Where **X** is 7 for ESDI disks, 5 for WREN2 ST506 disks and 3 for SMD disks.

2. Enter the device number according to the position of the disk drive on the controller (See Table B in Appendix A) and press <*RET*>.

   The list of alternative and bad blocks is displayed:

   ```
   ALTERNATIVE     BAD
   . . .           . . .
   . . .           . . .

   LIST BAD MAP    **DONE**

        Hit <return> to continue
   ```

3.   Press **<RET>**. The main menu will be redisplayed.

NOTE: If the list does not exist, or cannot be located, the message below is displayed, followed by the main menu:

```
Meaningless bad list
```

STAR: PROCEDURE TO GENERATE A SYSTEM ENVIRONMENT DESCRIPTION

Description

The *star* command should be run by the user every time a software malfunction occurs.

This command stores information such as system configuration, disk level etc., on a diskette or a temporary file. Note that the temporary file is not deallocated, so that the user can subsequently direct it to a printer. The documentation must then be sent to the technical assistance.

Use

1. Login as *root*.

2. Enter the following command:

    ```
    # star
    ```

A series of self-explanatory messages will be displayed to let the user choose the support media to which the information will be sent.

STREAMER UNIT: SAVE AND RESTORE A DISK

WARNING

This procedure is to be used only if the streeamer unit is connected to a DCS controller. If it is connected to a DCE controller, see "Savrest : Save and Restore a Disk Slice" in this section.

Description

This procedure enables the following operations to be performed:

- Save partially or entirely the contents of a disk to a cartridge.

- Restore to disk the contents of a cartridge obtained from a save procedure.

- Check that a save operation (disk/slice -> tape) has been correctly executed. This operations compares the contents of a cartridge with those of the disk or partition previously saved on the same cartridge.

NOTE: The save/restore operations must be performed on disks of the same type.

Use

If the system is being used, perform the Shutdown Procedure.

Identify the diskette labeled BOOT2 supplied with the system. Insert it in the unit and initialize the system by pressing the RESET button on the control panel.

The main menu will be displayed on the screen:

```
       <  S T R E A M E R  >

           ( Vers. - XXX)

   1 - ST506
   2 - ESDI
   3 - SMD
   4 - QUIT              (Exit)

Please Enter Your Choice ->
```

Enter the number corresponding to your type of disk and press *<RET>*. To quit enter 4.

If 1, 2 or 3 is selected the following mask will be displayed:

```
        <  S T R E A M E R  >

   1-  SAVE        ( Disk -> Tape )

   2-  RESTORE     ( Tape -> Disk )

   3-  VERIFY      ( Tape < > Disk )

   4-  QUIT        ( Exit )


Please Enter Your Choice ->
```

Enter:

1   to execute the procedure to save a disk to cartridge.

2   to execute the procedure to restore a disk from a cartridge.

3   to check that the contents of the cartridge are identical to the disk or slice saved.

4   to exit the procedure.

Press *<RET>* and go to the relevant subsection.

SAVE (Disk -> Tape)

The following mask will be displayed:

```
        S A V E     ( Disk -> Tape )


    1 -     DISK        ( All the disk )

    2 -     SLICE       ( Slice only )

    3 -     QUIT        ( Exit )


Please Enter Your Choice ->
```

Enter the number corresponding to the operation to be performed, and press *<RET>*. Go to the relevant subsection.

Disk Save

Insert a cartridge in the drive, making sure that the arrow is not pointing to SAFE.

A message similar to the following will be displayed:

```
Disk Number [0-x] ->
```

1. Enter the number of the disk to be saved (See Table B in Appendix A) and press *<RET>*. The following message will be displayed:

```
Do you confirm your request? (y or n) ->
```

2. To cancel the operation, enter *n* and press *<RET>*. The main menu will be redisplayed.
   To confirm the operation, enter *y* and press *<RET>*. The following mask will be displayed:

```
        S A V E     Operation in Progress

   DISK number    : D

   SLICE number   : ALL
```

3. When the tape is full, the following messages are displayed:

```
*******************************
*   END OF TAPE DETECTED.    *
*******************************
```

```
INSERT A NEW CARTRIDGE and press RETURN key.
```

4. Remove the cartridge from the drive and turn the arrow to SAFE. Insert another cartridge and press *<RET>*.

5. When the operation is finished, the following message is displayed:

    ```
    SAVE operation COMPLETE

    Do you want statistical information? (y or n) ->
    ```

6. To read the statistical information about the operation that is finished, enter *y* and press *<RET>*. The following messages will be displayed:

    ```
    Total blocks number saved          = ....
    Total reread/rewrite blocks on tape = .
    Total start/stops number on tape    = .

    Any slices or devices to handle? (y or n ) ->
    ```

    To return to the main menu, enter *y* and press *<RET>*. Otherwise enter *n* and press *<RET>*. The following message will be displayed:

    ```
    <<  S T R E A M E R    E N D  >>
    ```

7. The process is completed. Remove the bootstrap diskette BOOT2 and the cartridge from their drives. Turn the arrow on the cartridge to SAFE.

Slice Save

Insert a cartridge in the drive, making sure that the arrow is not pointing to SAFE.

A message similar to the following will be displayed:

```
Disk Number [0-x] ->
```

1. Enter the number of the disk from which the slice is to be saved (See Table B in Appendix A) and press *<RET>*. The following message will be displayed:

```
Slice Number [0-7] ->
```

2. Enter the number of the slice to be saved and press *<RET>*. The following message will be displayed:

```
Do you confirm your request? (y or n) ->
```

3. To cancel the operation, enter *n* and press *<RET>*. The main menu will be redisplayed.
   To confirm the operation, enter *y* and press *<RET>*. The following mask will be displayed:

```
        S A V E     Operation in Progress

    DISK number    : D

    SLICE number   : n
```

4. If the slice being saved exceeds the capacity of the cartridge, the following messages are displayed:

```
*****************************
*   END OF TAPE DETECTED.    *
*****************************
```

```
INSERT A NEW CARTRIDGE and press RETURN key.
```

5. Remove the cartridge from the drive and turn the arrow to SAFE. Insert another cartridge and press *<RET>*.

6. When the operation is finished, the following message is displayed:

```
SAVE operation COMPLETE

Do you want statistical information? (y or n) ->
```

7. To read the statistical information about the operation that is finished, enter *y* and press *<RET>*. The following messages will be displayed:

```
Total blocks number saved          = ....
Total reread/rewrite blocks on tape = .
Total start/stops number on tape   = .

Any slices or devices to handle? (y or n ) ->
```

To return to the main menu, enter *y* and press *<RET>*. Otherwise enter *n* and press *<RET>*. The following message will be displayed:

```
<< S T R E A M E R   E N D >>
```

8. The procedure has finished. Remove the bootstrap diskette BOOT2 and the cartridge from their drives. Turn the arrow on the cartridge to SAFE.

NOTE: If a slice number that does not exist is entered, the following message is displayed:

```
Slice n not existent! Do you want to try
again? (y or n) ->
```

Enter *y* and press *<RET>*. repeat the process from the beginning.

RESTORE (Tape -> Disk)

The following mask will be displayed:

```
        R E S T O R E ( Tape -> Disk )


   1 -     DISK          ( All the disk )

   2 -     SLICE         ( Slice only )

   3 -     QUIT          ( Exit )


Please Enter Your Choice ->
```

Enter the number corresponding to the operation to be performed, and press *<RET>*. Go to the relevant subsection.

Disk Restore

Insert the first cartridge obtained from the save procedure in its drive. A message similar to the following will be displayed:

```
Disk Number [0-x] ->
```

1. Enter the number of the disk to be restored (See Table B in Appendix A) and press *<RET>*. The following message will be displayed:

```
Do you confirm your request? (y or n) ->
```

2. To cancel the operation, enter *n* and press *<RET>*. The main menu will be redisplayed.
    To confirm the operation, enter *y* and press *<RET>*. The following mask will be displayed:

```
          R E S T O R E  Operation in Progress

     DISK number    : D

     SLICE number   : ALL
```

3. **When the first tape has been restored, the following messages are displayed:**

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*    END OF TAPE DETECTED.      *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * *

INSERT A NEW CARTRIDGE and press RETURN key.
```

4. **Remove the cartridge from the drive and turn the arrow to SAFE. Insert another cartridge and press <RET>.**

5. **When the operation is finished, the following message is displayed:**

```
RESTORE operation COMPLETE

Do you want statistical information? (y or n) ->
```

6. **To read the statistical information about the operation that is finished, enter y and press <RET>. The following messages will be displayed:**

```
Total blocks number restored       = ....
Total reread/rewrite blocks on tape = .
Total start/stops number on tape    = .

Any slices or devices to handle? (y or n ) ->
```

To return to the main menu, enter y and press <RET>. Otherwise enter n and press <RET>. The following message will be displayed:

```
<<  S T R E A M E R   E N D  >>
```

7. The procedure has finished. Remove the bootstrap diskette BOOT2 and the cartridge from their drives.

Slice Restore

Insert the cartridge containing the slice to be restored. A message similar to the following will be displayed:

```
Disk Number [0-x] ->
```

1. Enter the number of the disk to which the slice is to be restored (See Table B in Appendix A) and press **<RET>**. The following message will be displayed:

```
Slice Number [0-7] ->
```

2. Enter the number of the slice to be restored and press **<RET>**. The following message will be displayed:

```
Do you confirm your request? (y or n) ->
```

3. To cancel the operation, enter *n* and press **<RET>**. The main menu will be redisplayed.
   To confirm the operation, enter *y* and press **<RET>**. The following mask will be displayed:

```
        R E S T O R E  Operation in Progress

   DISK number    : D

   SLICE number   : n
```

If the slice to be restored is on more than one cartridge, the following messages will be displayed:

```
*****************************
*   END OF TAPE DETECTED.   *
*****************************
```

```
INSERT A NEW CARTRIDGE and press RETURN key.
```

4. Remove the cartridge from the drive and turn the arrow to SAFE. Insert the subsequent cartridge and press <RET>.

5. When the operation is finished, the following message is displayed:

    ```
    RESTORE operation COMPLETE

    Do you want statistical information? (y or n) ->
    ```

6. To read the statistical information about the operation that is finished, enter y and press <RET>. The following messages will be displayed:

    ```
    Total blocks number restored        = ....
    Total reread/rewrite blocks on tape = .
    Total start/stops number on tape    = .

    Any slices or devices to handle? (y or n ) ->
    ```

    To return to the main menu, enter y and press <RET>. Otherwise enter n and press <RET>. The following message will be displayed:

    ```
    <<  S T R E A M E R   E N D  >>
    ```

7. The procedure has finished. Remove the bootstrap diskette BOOT2 and the cartridge from their drives.

NOTE: If a slice number that does not exist is entered, the following message is displayed:

    ```
    Slice n not existent! Do you want to try
    again? (y or n) ->
    ```

    Enter y and press <RET>. Repeat the process from the beginning.

VERIFY (Tape < > Disk)

The following mask will be displayed:

```
        V  E  R  I  F  Y      ( Tape <> Disk )


   1 -     DISK          ( All the disk )

   2 -     SLICE         ( Slice only )

   3 -     QUIT          ( Exit )


   Please Enter Your Choice ->
```

Enter the number corresponding to the operation to be performed, and press **<RET>**. Go to the relevant subsection.

Disk Verify

Insert the cartridge in the drive. A message similar to the following will be displayed:

```
Disk Number [0-x] ->
```

1. Enter the number of the disk to be verified (See Table B in Appendix A) and press <*RET*>. The following message will be displayed:

```
Do you confirm your request?  (y or n)  ->
```

2. To cancel the operation, enter *n* and press <*RET*>. The main menu will be redisplayed.
    To confirm the operation, enter *y* and press <*RET*>. The following mask will be displayed:

```
         V  E  R  I  F  Y      Operation  in  Progress

    DISK number      : D

    SLICE number     : ALL
```

3. When the tape has been completely read, the following messages are displayed:

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * *
*    END  OF  TAPE  DETECTED.        *
* * * * * * * * * * * * * * * * * * * * * * * * * * * *

INSERT  A  NEW  CARTRIDGE  and  press  RETURN  key.
```

4. Remove the cartridge from the drive. Insert the subsequent cartridge and press <*RET*>.

5. If the contents of the disk and the cartridges are not identical, the following message is displayed:

```
VERIFY operation FAILED
```

6. When the operation is finished, the following message is displayed:

```
VERIFY operation COMPLETE

Do you want statistical information? (y or n) ->
```

7. To read the statistical information about the operation that is finished, enter *y* and press **<RET>**. The following messages will be displayed:

```
Total blocks number verified      = ....
Total reread/rewrite blocks on tape = .
Total start/stops number on tape   = .

Any slices or devices to handle? (y or n ) ->
```

To return to the main menu, enter *y* and press **<RET>**. Otherwise enter *n* and press **<RET>**. The following message will be displayed:

```
<<  S T R E A M E R   E N D  >>
```

8. The process is completed. Remove the bootstrap diskette BOOT2 and the cartridge from their drives.

Slice Verify

Insert a cartridge in the drive. A message similar to the following will be displayed:

```
Disk Number [0-x] ->
```

1. Enter the number of the disk from which the slice is to be verified. (See Table B in Appendix A) and press **<RET>**. The following message will be displayed:

```
Slice Number [0-7] ->
```

2. Enter the number of the slice to be verifiied and press **<RET>**. The following message will be displayed:

```
Do you confirm your request? (y or n) ->
```

3. To cancel the operation, enter *n* and press **<RET>**. The main menu will be redisplayed.
   To confirm the operation, enter *y* and press **<RET>**. The following mask will be displayed:

```
        V E R I F Y  Operation in Progress

   DISK number    : D

   SLICE number   : n
```

4. If the slice being checked has been saved on two different cartridges, the following message is displayed:

```
*****************************
*   END OF TAPE DETECTED.    *
*****************************

INSERT A NEW CARTRIDGE and press RETURN key.
```

5. Remove the cartridge from the drive. Insert the subsequent cartridge and press <RET>.

    If the contents of the disk and the cartridges are not identical, the following message is displayed:

    ```
    VERIFY operation failed
    ```

6. When the operation is finished, the following message is displayed:

    ```
    VERIFY operation COMPLETE

    Do you want statistical information? (y or n) ->
    ```

7. To read the statistical information about the operation that is finished, enter y and press <RET>. The following messages will be displayed:

    ```
    Total blocks number saved           = ....
    Total reread/rewrite blocks on tape = .
    Total start/stops number on tape    = .

    Any slices or devices to handle? (y or n ) ->
    ```

    To return to the main menu, enter y and press <RET>. Otherwise enter n and press <RET>. The following message will be displayed:

    ```
    <<  S T R E A M E R   E N D  >>
    ```

8. The procedure has finished. Remove the bootstrap diskette BOOT2 and the cartridge from their drives.

Section VII

COMPATIBILITY TOOLS

IBMREAD: COPYING FILES FROM IBM DISKETTES

Description

This procedure is used to copy one or more files from an IBM diskette to the system disk.

The copy is performed in the directory in which the user is currently working. The copy maintains the same file names as on the IBM diskette (upper case format as used in IBM files).

If the diskette contains files with the same names as those already present in the system, the copy causes the new files to be written over the old files. Therefore, the user is advised to create a special directory to which the files will be copied.

The files that can be copied by means of this procedure must have the following characteristics:

- they must not be multi-volume
- they must not have tree structures

Use

This procedure must be run from the directory in which the user wants to copy the files.

WARNING

Before using this command, make sure that the nodes *fdibm*, *ifdsk0*, *fdibmhd* and *ifdskQ* (*fdibmhd* and *ifdskQ* for high density) exist under the */dev* directory. If not, create them following the procedure "How to Create Nodes for Use of Non-native Diskettes" in Section V.

To start the procedure, a command with the following syntax must be entered:

```
# ibmread /dev/name [-o] [files]
```

where:

name   Is the symbolic identifier of the IBM diskette from which the file is to be copied. It must be specified according to the following table:

```
Diskette type                          Name

9 sectors/track double sided           fdibmd9
9 sectors/track single sided           fdibms9
8 sectors/track double sided           fdibmd8
8 sectors/track single sided           fdibms8
high density                           fdibmhd
```

-o   If the files to be copied do not contain source programs (e.g.: data file, object file), name must be followed by the **-o** option.

files   To specify the names of the files to be copied. The name may consist of up to 8 characters followed by a full stop and 3 other characters. If no file name is specified the entire contents of the diskette are copied.

The following message will be displayed:

```
Insert ibm diskette and type return
```

Insert the IBM diskette and press *<RET>*.

For each file copied the following message will be displayed:

```
ibmrd07 [file]: successfully transferred from
floppy
```

where `file` is the name of the file copied. If, instead of this message, an error message is displayed, the copy of the file has not been completed: repeat the copy procedure. When the last file has been copied, in addition to the message showns above, the following message will be displayed:

```
( end )
```

NOTES

- Empty files are transferred.

- If during the copy of object file, the −o option is not used, these files will be ruined.

IBMWRITE: COPYING FILES TO AN IBM DISKETTE

Description

This procedure is used to write one or more files from the system to an IBM diskette, prior to converting the name from lower case to upper case characters as used in IBM files.

If the diskette contains a file with the same name as the one to be copied, the copy is interrupted and the following message is displayed:

```
ibmwr09 file... is already present! (not replaced)
```

The copy will continue with the next file.

Use

The procedure can be run from any directory.

WARNING

Before using this command, make sure that the nodes *fdibm*, *ifdsk0*, *fdibmhd* a n d *ifdskQ* (*fdibmhd* and *ifdskQ* for high density) exist in the */dev* directory. If they do not, create them following the procedure "How to Create Nodes for Use of Non-native Diskettes" in section V.

To start the procedure, a command with the following syntax must be entered:

```
# ibmwrite /dev/name [-o] [files]
```

where:

name Is the symbolic identifier of the IBM diskette to which the file is to be copied. It must be specified according to the following table:

Diskette type	Name
9 sectors/track double sided	fdibmd9
9 sectors/track single sided	fdibms9
8 sectors/track double sided	fdibmd8
8 sectors/track single sided	fdibms8
high density	fdibmhd

-o If the files to be copied do not contain source programs (e.g.: data file, object file), **name** must be followed by the **-o** option.

files To specify the names of the files to be copied. The name may consist of up to 8 characters followed by a full stop and 3 other characters. At least one filename must always be present. It is possible to specify full pathnames to specify the names of the files (when they are to be copied from different directories).

The following message will be displayed:

```
Insert ibm diskette and type return
```

Insert the IBM diskette and press *<RET>*. For each file copied the following message will be displayed:

```
ibmwr07 [file]: successfully transferred to
floppy
```

where `file` is the name of the file copied.

If, instead of the above message, an error message is displayed, the copy of the file has not been completed: repeat the copy procedure.

When the last file has been copied, the following message will be
displayed:

        (end)

NOTES

- Empty files are transferred.

- If during the copy of object file, the —o option is not used, such files will
  be ruined.

iXS/iNAT: UNIPLUS AND UNIX DISKETTE COMPATIBILITY

This paragraph discusses the degree of compatibility between diskettes for UNIPLUS and UNIX systems.

WARNING

Before using the commands shown below, make sure that the node *ifdsk0* exists under the */dev* directory. If not, create it following the procedure described in "Creating Nodes for the Use of Non-native Diskettes" in Section V.

Mount Format Diskettes

Mount format diskettes are not compatible because the UNIPLUS and UNIX file systems have different characteristics. Therefore, a diskette which has been prepared using *mount* under UNIPLUS cannot be restored under UNIX, and vice versa.

Tar or cpio Format Diskettes

The compatibility of *tar* or *cpio* format diskettes depends on whether they have been formatted under UNIPLUS or UNIX.

A diskette formatted on UNIX is not compatible with the UNIPLUS system and may only be used by the UNIX system. However, a diskette formatted with the *diskformat -ver /dev/fdformat* command on the UNIPLUS system may be:

    written to by UNIPLUS and read by UNIX
    written to by UNIX and read by UNIPLUS
    written to and read by both UNIPLUS and UNIX.

To use a UNIPLUS diskette on the UNIX system, the following command must first be entered:

 # iXS   Press <*RET*>

At the prompt signal (#), the system is set up to use diskettes formatted on UNIPLUS. In order to once more use diskettes formatted on UNIX, thereby returning to the situation prior to the execution of *iXS*, enter the following command:

 # iNAT   Press <*RET*>

APPENDIX A

TABLES

TABLE A: ORGANIZATION OF SYSTEM DISKS

The system disk is delivered with one of the following structures, according to its type.

Wren2 ST506

```
Description for Disk ST506 WREN2 #D "....media"
Total Number of Cylinders: 923
```

Slice	Start Cylinder	Num. Cylinder	Num. phys. Blocks
0	0	200	30600 (~15.7 MB)
1	200	100	15300 (~7.8 MB)
2	300	623	95319 (~48.8 MB)
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	923	140301 (~72.8 MB)

Maxtor ESDI

Description for Disk MAXTOR (ESDI) " boot media"
Total Number of Cylinders: 1202

Slice	Start Cylinder	Num. Cylinders	Num. Phys. Blocks
0	0	60	32400 (~16.6 MB)
1	60	30	16200 (~8.3 MB)
2	90	1112	600480 (~306.4 MB)
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	1202	649080 (~332.3 MB)

Wren3 ESDI

Description for Disk WREN3 (ESDI)   "Boot media"
Total Number of Cylinders: 950

Slice	Start Cylinder	Num. Cylinders	Num. Phys. Blocks
0	0	100	32400 (~16.6 MB)
1	100	50	16200 (~8.3 MB)
2	150	800	259200 (~132.7 MB)
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	950	307800 (~157.6 MB)

The slices on each system disk have the following contents:

Slice	Contents
0	root
1	tmp
2	usr
3	--
4	--
5	--
6	--
7	entire disk

TABLE B: RELATIONSHIP BETWEEN THE POSITION OCCUPIED BY THE DISK IN THE SYSTEM AND THE DISK NUMBER

DISK WITH ST506 INTERFACE

Central Unit	D01	0
	D02	1
	D03	2

DISK WITH ESDI INTERFACE

Central Unit	D01	0
	D02	1
	D03	2
Expansion Unit	D01	4
	D02	5
	D03	6

For SMD disks. see the number indicated on the disk unit container (on the side of each SMD disk unit).

TABLE C: HOW TO DEFINE A WORK-STATION DEVICE NAME

The identifier of a work-station must be defined as:

ttyxn

where: **x**   is the station/line processor number and depends on the board number and the unit in which the board is mounted. See the tables below.

        n   is to be found counting the ports from top to bottom on the board, the top position being position 0.

CENTRAL UNIT

Board number	Station/line processor number (x)
4	0
5	1
6	2
7	3
8	9
9	8

EXPANSION UNIT

Board number	Station/line processor number (x)
4	7
5	6
6	5
7	4
8	a
9	b

USER'S REMARKS FORM

TITLE
XPS-100
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ADDENDUM B

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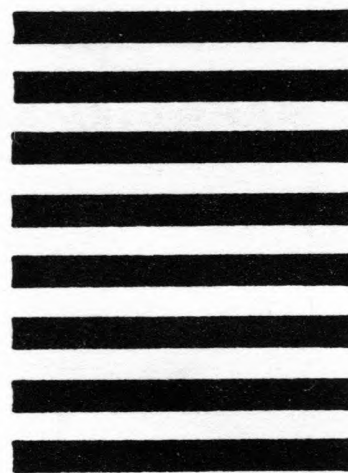
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